



ROHDE & SCHWARZ

EMF System

TV Test Receiver

EMFT

TV Test Demodulator

EMFD

TV Channel Receiver

EMFK

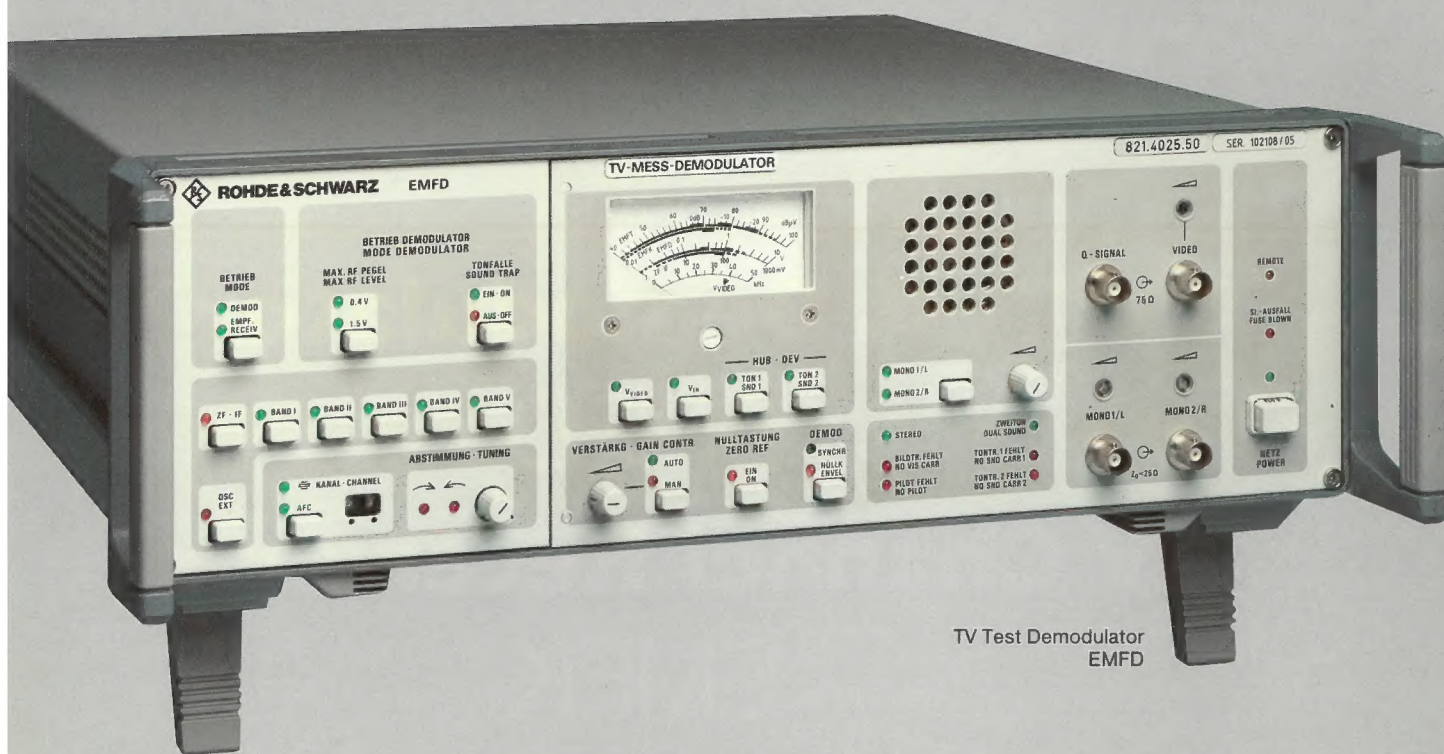
Standard B/G



Optional **IEC 625 Bus** IEEE 488

- Real synchronous detection with quadrature signal output for measurement of incidental phase modulation of vision carrier
- Multitone capability in line with dual-carrier technique and NICAM
- RF input voltage indication
- Tunable in all TV bands including hyperband 330 to 470 MHz (EMFT)

Data sheet
821 401
E - 1



TV Test Demodulator EMFD

The new equipment family EMF is capable of solving all problems in the field of TV reception and demodulation. State-of-the art techniques such as synthesizer, double superheterodyning, SAW filter afford great operating convenience and outstanding transmission quality.

There are three units available for the different measurement tasks and transmission requirements:

- EMFT — continuously tunable test receiver and demodulator
- EMFD — TV test demodulator with AFC and crystal-controlled operation
- EMFK — selective, crystal-controlled channel receiver and demodulator

All units of the EMF family are provided with two isolated video outputs and two outputs for the Q signal. These outputs permit the measurement of the incidental phase modulation of the vision carrier which determines the intercarrier S/N ratio of the sound channel. In addition, the adjustment of linearity and phase equalizing circuits in transmitters is facilitated through the use of the Q signal.

The complex sound processing circuitry employs state-of-the-art ICs taking full account of present-day quality requirements. The deviation of the two sound demodulators can thus be guaranteed to be equal — which is the prerequisite for low stereo crosstalk.

Switchover from synchronous detection to envelope detection is possible. The input voltage and the frequency deviation of the sound carriers are indicated on the analog meter. The sound level is monitored by means of a built-in loudspeaker.

Special features

TV Test Receiver EMFT

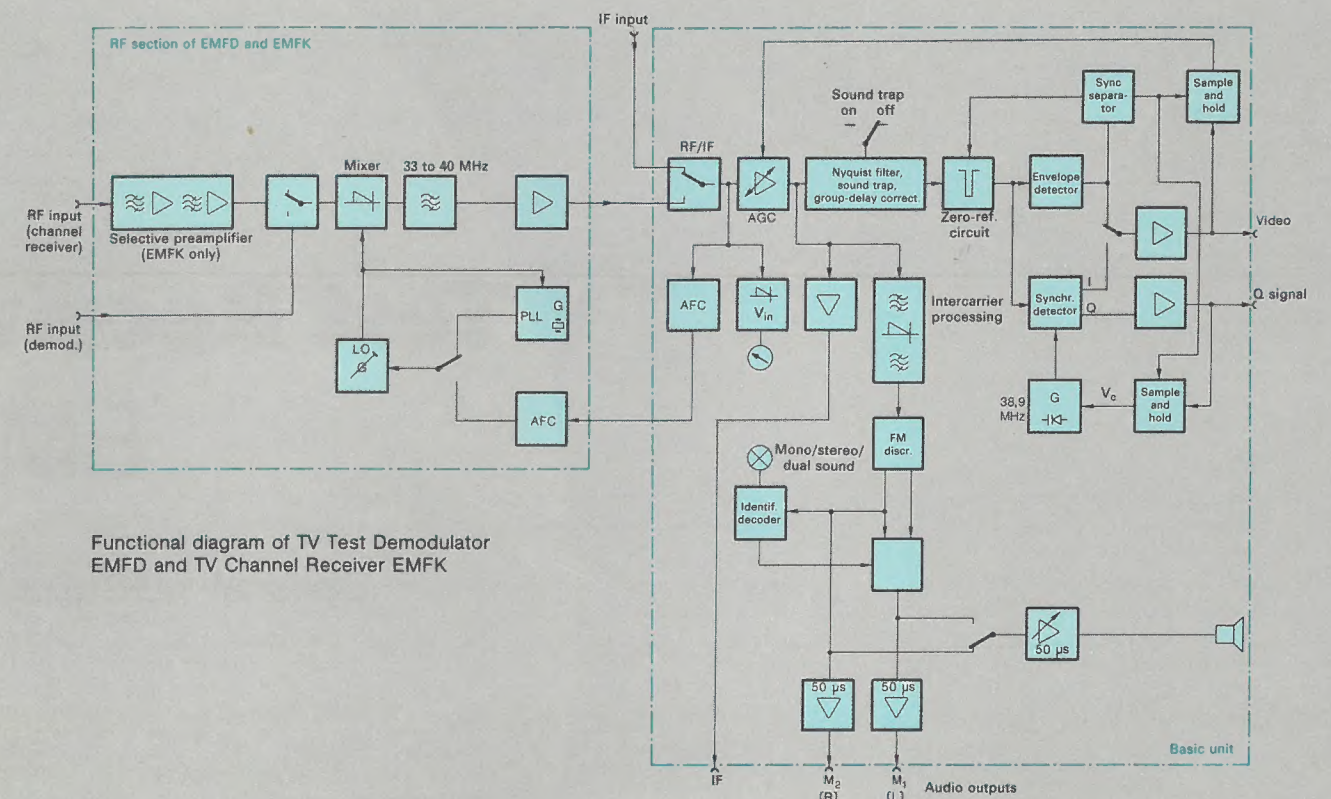
- Channel selection with digital entry of channel number either in manual or in remote mode
- Automatic control of frequency offset up to ± 100 kHz
- Continuously tunable in all TV bands, also in special channels up to 470 MHz
- SAW filter switch-selected on front panel for adjacent-channel suppression
- Optional IEC/IEEE-bus control (IEC 625-1/IEEE 488), thus channel selection also possible by entering the vision carrier frequency
- Reduction of IF gain allowing operation at high input levels (demodulator mode) and thus providing increased video S/N ratio

TV Test Demodulator EMFD

- Test demodulator for VHF, UHF and IF
- Crystal-controlled operation at a fixed frequency, switchover to continuously tuned AFC possible
- Sound trap can be switched off
- Selectable input sensitivity
- IF output suitable for connection of TV Dual-sound Demodulator FATF for deviation measurement

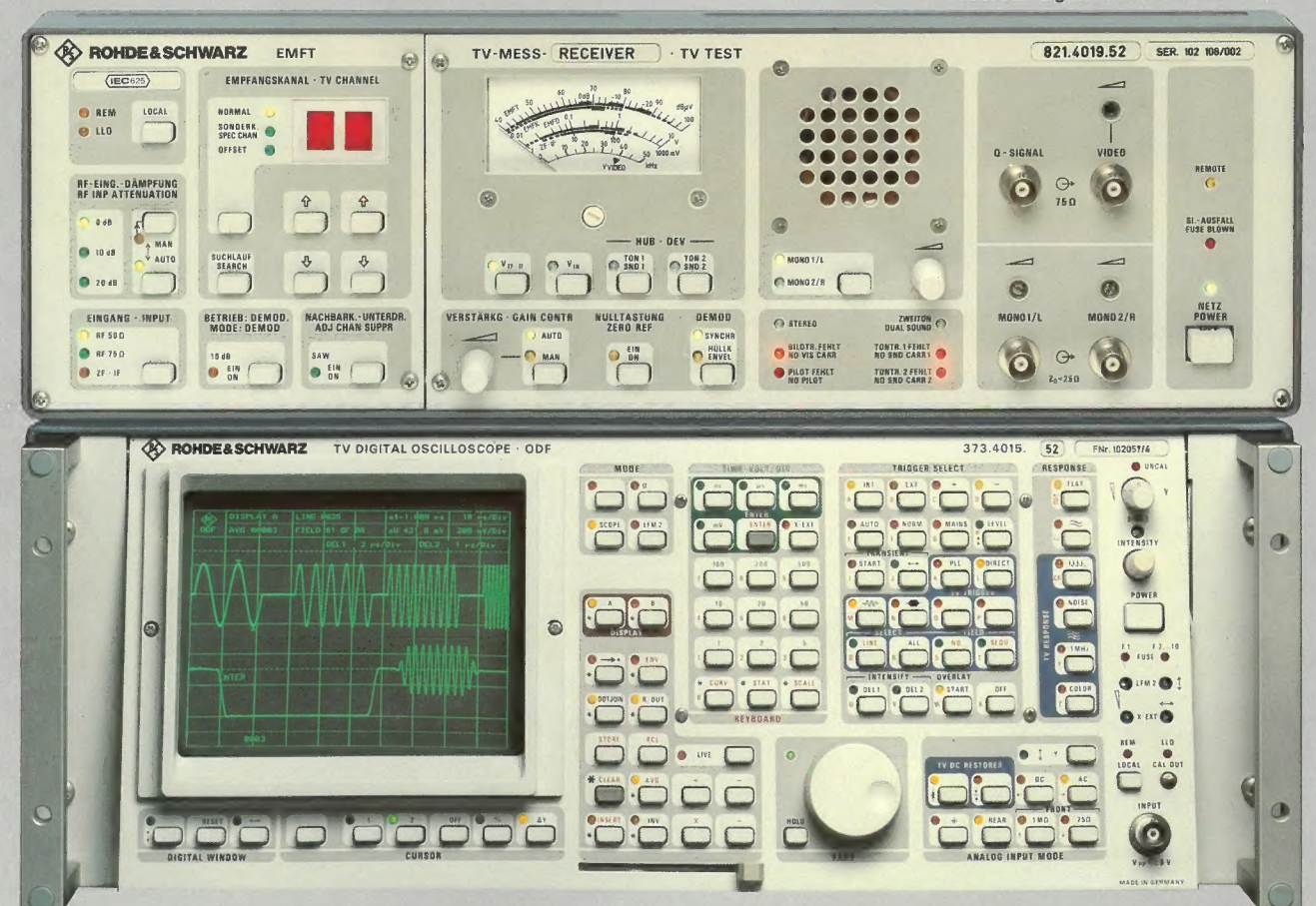
TV Channel Receiver EMFK

- Suitable as relay receiver for transmission and measurements
- Continuously tunable demodulator same as EMFD, however, with additional input via selective filter and preamplifier



Functional diagram of TV Test Demodulator EMFD and TV Channel Receiver EMFK

TV Test Receiver EMFT (top) plus TV Digital Oscilloscope ODF used for insertion signal measurement



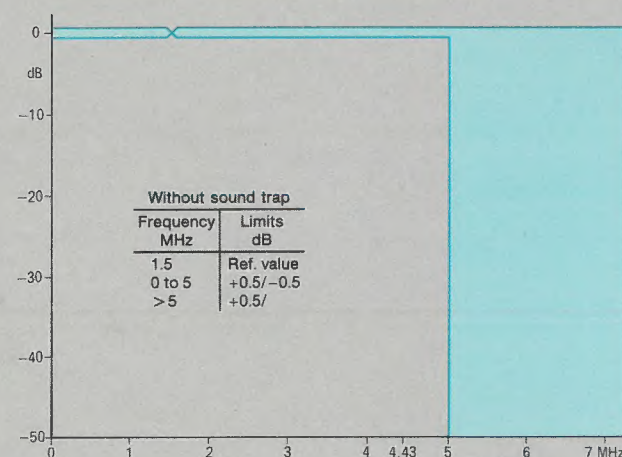
TV Test Receiver

EMFT

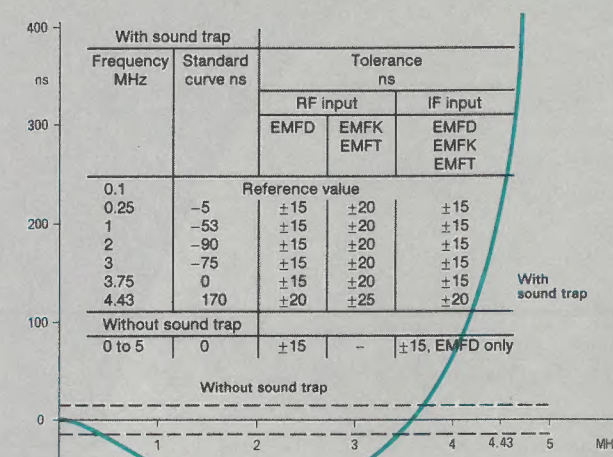
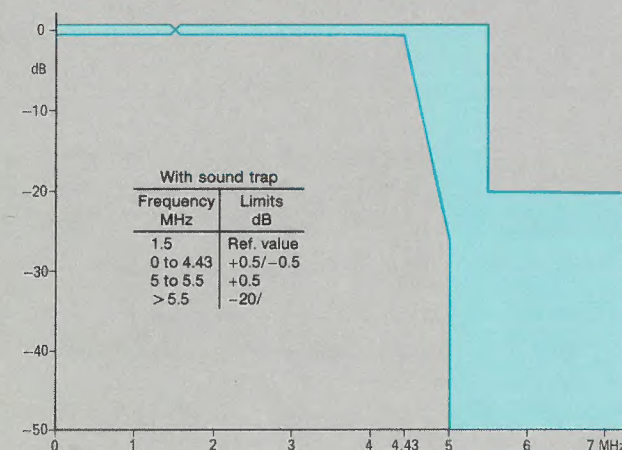
Optional **IEC 625 Bus** IEEE 488



TOLERANCE MASKS

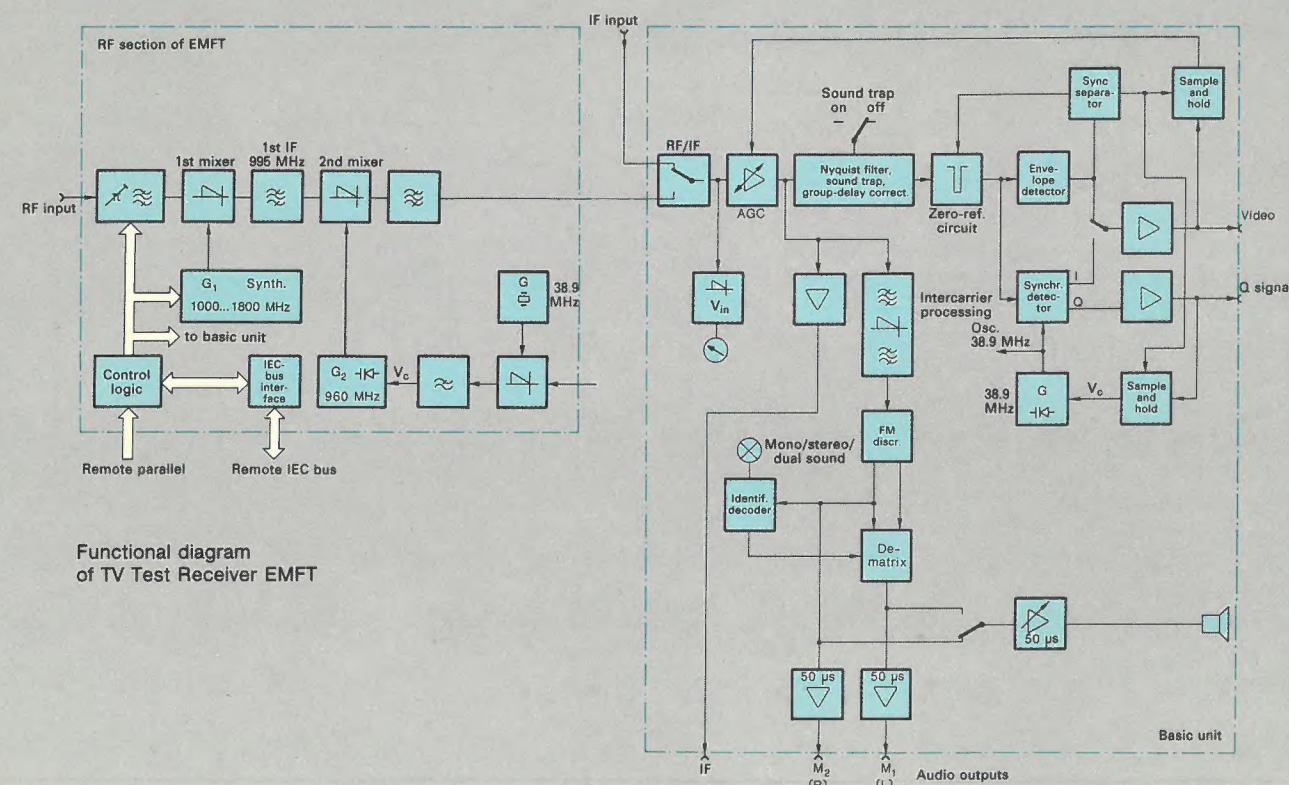


Tolerance of overall amplitude characteristic (RF, IF, VF) without sound trap



Group-delay characteristic of EMF family: curve with sound trap, dashed line for operation without sound trap
EMFT only: Additional ripple with SAW filter $\leq \pm 30$ ns

Tolerance of overall amplitude characteristic (RF, IF, VF) with sound trap
EMFT only: Additional ripple with SAW filter $\leq \pm 0.3$ dB



Functional diagram of TV Test Receiver EMFT

Specifications

	TV Test Receiver EMFT	TV Test Demodulator EMFD	TV Channel Receiver EMFK
Frequency ranges	bands I, II, III, IV/V, special channels up to 470 MHz and IF 38.9 MHz	bands I, II, III, IV/V and IF 38.9 MHz	bands I, II, III, IV/V and IF 38.9 MHz
Channel selection	entry of channel number, automatic search or via IEC bus (option)	fixed-channel operation and tunable with AFC	fixed-channel operation, also AFC when used as demodulator
Frequency processing	by synthesizer	crystal and AFC $\leq \pm 10$ kHz (crystal) $\leq \pm 30$ kHz (AFC)	crystal and AFC $\leq \pm 10$ kHz (crystal) $\leq \pm 30$ kHz (AFC)
Frequency error	$\leq \pm 2.5$ kHz		
Inputs			
RF inputs	BNC female (50 and 75 Ω)	BNC female (50 Ω)	N (50 Ω , RX) and BNC female (50 Ω , demod.)
IF input	BNC female	BNC female	BNC female
Input voltage range ¹⁾			
RF switchable	0.15 to 30 mV	20 to 400 mV	250 μ V to 5 mV
IF	0.5 to 100 mV	80 to 1.6 mV	2.5 to 50 mV
IF	5 to 100 mV	5 to 100 mV	5 to 100 mV
Return loss			
IF	≥ 20 dB	≥ 20 dB	≥ 20 dB
RF, 50 Ω	< 300 MHz: ≥ 12 dB > 300 MHz: ≥ 10 dB	≥ 20 dB	≥ 16 dB
RF, 75 Ω	≥ 8 dB		
RF input attenuation	0/10/20 dB automatic or manual adjustment	17/29 dB	0/20 dB (internal link)
Noise figure	VHF: ≤ 9 dB, UHF: ≤ 12 dB (with RF input attenuation 0 dB)	—	typ. 8 dB
Video S/N ratio, rms measurement, CCIR-weighted, HP 10 kHz, ref. to black-to-white transition	≥ 58 dB (input level 3 mV) ≥ 62 dB (input level 10 mV and reduced IF gain)	VHF: ≥ 67 dB UHF: ≥ 64 dB (input level 400 mV/1.5 V)	≥ 62 dB (input level 5 mV)

Common specifications of equipment family EMF

Transmission characteristics in video channel

Amplitude/frequency response (RF + IF + video, SAW filter switched off in case of EMFT)	see page 6
Group-delay characteristic (SAW filter switched off in case of EMFT)	see page 6
Video S/N ratio	see above
Nonlinearity with modulation depth 10 to 75% (synchronous detection)	
Differential gain	$\leq 3\%$
Differential phase	$\leq \pm 2^\circ$
Tilt (50 Hz)	$\leq 0.5\%$
Gain control, automatic or manual	
Dynamic range	≥ 34 dB (typ. 40 dB) additionally 2×10 dB input attenuation for EMFT

Transmission characteristics in audio channel

Inter-carrier frequency	5.5/5.742 MHz
Frequency response flatness, referred to deemphasis 50 μ s (cannot be disabled)	$\leq \pm 0.5$ dB
Harmonic distortion at ± 50 kHz deviation and $f_{mod} = 5$ kHz	$\leq 1\%$, typ. 0.5%
Stereo crosstalk (L \rightarrow R or R \rightarrow L)	down ≥ 36 dB
Channel crosstalk, selective measurement ($M_1 \rightarrow M_2/M_2 \rightarrow M_1$)	down ≥ 70 dB
Inter-carrier S/N ratio, measured to DIN 45405 (quasi-peak) with sinusoidal vision modulation (0 to 5 MHz), referred to nominal output level, weighted to CCIR 468-3	≥ 46 dB (typ. 50 dB)
with all-black picture	≥ 54 dB

SPECIFICATIONS

Outputs

Video outputs	
In-phase signal	2; 75 Ω , BNC (front/rear panel)
Quadrature signal	2; 75 Ω , BNC (front/rear panel)
Output level	
In-phase video output	1 V_{pp} , CVS with standard modulation
Quadrature output	corresponding to 1 V_{pp} with standard modulation and internal phase shift of switching carrier by 90°
IF output	1; 50 Ω , BNC (rear panel)
Output level (AGC)	200 mV _{rms} ± 3 dB
Frequency response flatness in range 33 to 40 MHz, referred to 38.9 MHz	≤ 0.5 dB
Audio outputs	
Signal depending on pilot coding mono or R and L or M ₁ and M ₂	
Front panel	2; BNC, unbalanced, $Z_{out} < 25 \Omega$
Rear panel	37-contact connector
Output level with ± 30 kHz deviation and $f_{mod} = 500$ Hz	+6 dBm ± 0.5 dB

Indication

Analog meter for	a) input level with marking of optimal input level range b) deviation of sound 1 and sound 2 (fsd 50 kHz) c) marker for correct video output level
LED indication for	selected channel, "no vision carrier", "no sound carrier 1", "no sound carrier 2", "no pilot", "stereo", "dual sound"

Miscellaneous

Zero-reference pulse	for checking of residual carrier, field-repetitive, can be enabled in lines 15 and 328 (factory-set) of field blanking interval or triggered by external pulse
Error referred to CVS in case of synchronous detection	$\leq 1.5\%$
Loudspeaker with volume control	can be connected to both sound channels

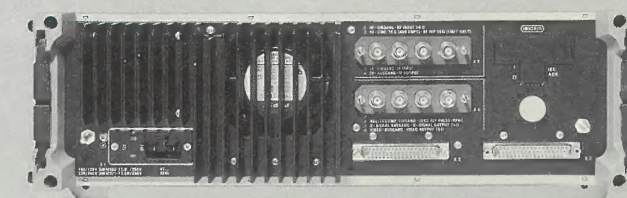
General data

Rated temperature range	+5 to +45 $^\circ$ C
Operating temperature range	0 to +45 $^\circ$ C
Storage temperature range	-40 to +70 $^\circ$ C
Power supply	110/120/220/240 V $\pm 10\%$, 47 to 63 Hz (110 VA)
Dimensions (W \times H \times D), weight	450 mm \times 147 mm \times 525 mm, 16 kg

Ordering information

Order designation	► TV Test Receiver EMFT 821.4019.50 ► TV Test Demodulator EMFD 821.4025.50 ► TV Channel Receiver EMFK 821.4283.50 Bands I, II, III, IV/V 821.4283.53 Bands IV/V 821.4283.54 Band II please enquire
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¹⁾ Additionally 6 dB beyond lower and upper limits of control range



Rear panel of equipment family EMF



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Operating instructions

TV Test Receiver

EMFT

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Table of Contents

1	Data sheet	
2	Description and Design	
2.1	Description	2.1
2.2	Design	2.2
3	Preparation for Operation	
3.1	Setting to Local Power Supply	2.2
3.2	Positioning the Unit	2.2
3.3	Cabling	2.2
3.4	Adjustment of Mechanical Zero	2.2
4	Operation (see front and rear views and associated legend)	
4.1	Switching On	2.3
4.2	Signal Input	2.3
4.3	Signal Outputs	2.3
4.4	Range Selection	2.3
4.5	Tuning	2.4
4.6	RF Attenuation	2.4
4.7	Operation with Increased IF Attenuation	2.4
4.8	Surface Acoustic Wave Filter (SAW)	2.4
4.9	Meter	2.4
4.10	IF Gain Control	2.5
4.11	Zero Reference	2.5
4.12	Selection of Detector	2.5
4.13	Sound Trap	2.5
4.14	Loudspeaker	2.5
4.15	Indication of Carrier, Pilot and Identification Frequencies	2.5

5 Interface Description, Remote Control

5.1	Fundamentals	3.1
5.2	Clocked inputs	3.1
5.3	Example: setting Channel S18	3.2
5.4	Static Inputs	3.2
5.5	Signals	3.2
5.6	Pin Assignment for X2	3.3
5.7	Pin Assignment for X3	3.4
5.8	Inputs on X2 and X3	3.5
5.9	Power Supply for Telecontrol System	3.5
5.10	Remote Control via IEC/IEEE Connector	3.5
5.11	View of X2 and X3 contacts	3.5

6 Coding Options 3.6

7 Channel Assignment (*Vision Carrier Frequency*)

7.1	Standard B/G	4.1 - 4.2
7.2	Standard M	4.3 - 4.4

8 Legend for Front and Rear Views 5.1 - 5.5

9 Explanation of control elements 6.1

2 Description and Design

2.1 Description

The receiver section can be tuned channel-by-channel within the selectable receiving ranges. This is carried out either automatically by means of a search run or by directly entering the channel number. The channel is selected according to the frequency synthesis principle with PLL. Complex circuitry guarantees lowest possible drift. The TV channel can therefore be changed within a matter of seconds. The channel number is indicated on 7-segment LED displays.

Signal path:

The RF signal is preselected and divided into 8 ranges in the RF section and mixed in the 1st mixer with the oscillator frequency controlled by the synthesizer to produce the 1st IF. This 1st IF is mixed with a further oscillator frequency of fixed frequency and phase according to the double conversion principle to produce the final, standard IF. The IF signal is applied to the IF amplifier via a selectable SAW filter following sampling. In addition to the selection circuit, the IF amplifier contains the following function groups: sound traps, Nyquist filter, group-delay correction and selectable zero reference. The signal is subsequently demodulated in the envelope and synchronous detectors. The video and Q signals are applied to the outputs following amplification and impedance matching. Following the IF control, the IF signal is also used for intercarrier processing. The sound intercarrier signals thus obtained are demodulated, decoded and applied to the AF stage. The AF signals are applied to the audio outputs following deemphasis.

An analog meter indicates the RF input level, the video level and the sound carrier deviation. The EMFT can be switched between envelope and synchronous detection. A PLL ensures that the switching carrier phase remains constant for the synchronous detector.

The demodulated signals are available with adjustable levels at two video outputs and two audio outputs (a set each on front and rear panels). The video level is held constant by automatic or manual gain control of the IF stage; level variations up to approx. 40 dB can be handled. The IF gain can be reduced by a further 10 dB. The dynamic range is increased to 60 dB by an input attenuator which is cut in automatically in two 10-dB steps (automatic RF attenuation). This is important for operation as a test demodulator.

An internally triggered field and line-synchronous zero-reference pulse or an externally controlled zero-reference pulse can be inserted into the video signal for determining the modulation depth. The various operating states and the presence of carrier, pilot and identification frequencies in the receive signal are indicated by LEDs. A small loudspeaker is present to monitor sound.

All important operating functions can be remote controlled via the 30-contact connectors X2, X3. The corresponding signalling, audio output and loudspeaker output signals as well as ± 12 V and +5 V supplies for a remote control equipment are also available on these connectors. An external meter can also be connected to indicate the input level VIN at the IF amplifier. The unit can be optionally equipped with an IEC 625 interface.

EMFT OPERATING INSTRUCTIONS

2.2 Design

The unit is a 19-inch bench model with fold-away feet and can be incorporated in racks. The front panel is divided, i.e. the left-hand side (RF input section) is different depending on the model and contains the controls for channel selection and input parameters. The right-hand side (basic unit) contains the controls for selecting the test functions, the display, loudspeaker and connections for output signals. All signal and control connections are located on the rear panel. The connectors have a slight mechanical play thus facilitating connection to a rack.

The inside of the unit is clearly divided into function groups:

Righthand third	- Synthesizer board, IEC/IEEE-bus board
Lefthand side	- Motherboard (test functions, output signals)
Lefthand side, top	- RF input section, variable according to model (can be swung upwards)
Lefthand side, centre	- IF amplifier (can be swung upwards)
Lefthand side, rear	- Power pack (can be removed for servicing)

3 Preparation for Operation

For numbering of operating controls, see legend for front and rear views

3.1 Setting to Local Power Supply

Before operation, check the setting of the AC supply and the fuse on the rear panel!

The unit is factory-set to 220 V. The AC supply must not deviate by more than + 10 % to -15 % from the set value. If a different setting is required, the selector 102 next to the power plug 103 must be removed and reinserted according to the new value. With AC supplies of 100 to 120 V, the 1-A slow-blow fuse must be replaced by a 2-A slow-blow fuse (fuse holder 101).

3.2 Positioning the Unit

When used as a bench unit, ensure that the ventilation is not hindered. Overheating, especially in continuous operation, is thus prevented. Sufficient ventilation must also be ensured when the unit is rack-mounted.

3.3 Cabling

Connections for input and output signals are made by BNC plugs and sockets, those for the control signals by 37-contact connectors. To guarantee unimpaired results, the RF and video connections must be made using screened coaxial cables with matching impedance. The AC supply is connected via a Euro power connector.

3.4 Adjustment of Mechanical Zero

A screw (30) is located below the meter for adjustment of the mechanical zero. This may be necessary following transport.

EMFT OPERATING INSTRUCTIONS

4 Operation (see front and rear views and associated legend)

4.1 Switching On

The unit is switched on by the power switch 69 at the bottom right on the front panel. The LED 68 signals operation. LED 67 lights up if the fuse is blown. If the fuse blows again following replacement, either the power supply selector is incorrectly set or there is a fault in the unit (see service manual).

4.2 Signal Input

The RF input level should be in the range 0.1 to 50 mV (40 to 94 dB μ V). The range can be switched over to 0.3 to 150 mV (50 to 104 dB μ V) (see 3.6). Note: 60 dB μ V = 1 mV. An appropriate attenuator must be switched in if the input level is too high. The characteristic impedance is either 50 Ω or 75 Ω . A signal can also be applied directly to the IF amplifier. The level should be in the range 5 to 100 mV. The input is selected using key 11. The selected input is indicated on LEDs 8 to 10 and stored if the power fails.

4.3 Signal Outputs

The EMF contains two audio, two video and two Q signal outputs on the front and rear panels. The respective outputs are connected in parallel and therefore do not need to be switched over. The impedance for the Q and video signals is 75 Ω , for the audio signal <25 Ω .

The level of the video and audio outputs can be adjusted on the front panel by means of potentiometers 60, 62 and 64 using a small screwdriver. The unit is factory-set to the specifications. The video output is used to connect test equipment such as monitors, oscilloscopes etc.

The Q signal output has no signal if the phase of the vision carrier is correct. A Q signal is output if there is a phase deviation. For a phase difference of 90°, the Q signal is equal to the video signal. Thus the incidental phase modulation of the vision carrier can be measured by evaluating the Q signal.

4.4 Range Selection

The EMFT receives channels in three ranges:

Normal range	Band I channels 2-4
	Band III channels 5-12
	Band IV/V channels 21-69

Special channel range:	USB	S1-S10
	OSB	S11-S20
	Hyperband	S21-S41

Offset channel range:

The same receiver frequencies are programmed as in the normal range. Customer-specific programming of the EPROM can be carried out if required - e.g. offset channels, channels outside television standard.

To select the range, press key 18. The selected range is indicated on LEDs 15-17 and stored in the event of power failure.

4.5 Tuning

Within the three ranges, tuning to the respective receiver frequency is carried out within the standard channel raster. This is achieved either automatically by means of a search run or by directly entering the channel number. The channel number is output on two 7-segment LED displays. The automatic search is started by pressing the search key 19 and takes place upwards in steps starting at the last set channel. The search is stopped if a valid receive signal is found - the threshold can be adjusted using R39 (synthesizer). The search is also stopped if one of the keys 11, 18, 21, 23-26 is pressed or if the highest channel number is reached. If the unit is switched on again or if after a power failure, the search starts at the lowest channel number. The search is also reset by pressing the channel selection keys 23-26 together with the search key 19.

A channel number can be selected directly in steps of 1 and 10 using the channel selection keys 23-26. The set channel is automatically stored in the event of a power failure.

4.6 RF Attenuation

A 10-dB attenuator is automatically cut in if the RF input level exceeds approx. 70 dB μ V. The attenuation is increased to 20 dB if approx. 80 dB μ V is exceeded. The RF attenuation can also be selected manually by pressing key 14. The set attenuation is automatically added to the measured value, i.e. the displayed value corresponds to the applied input voltage. The switching thresholds are defined such that the unit mainly operates in the optimum range between 65 and 90 dB μ V. The selected attenuation is displayed on LEDs 4 to 6 and is stored in the event of a power failure.

4.7 Operation with Increased IF Attenuation

A higher input level (3 mV \rightarrow 10 mV) can be applied in order to improve the S/N ratio (56 dB \rightarrow 60 dB). This is particularly important if the EMFT is used as a test demodulator. The IF gain must be reduced by 10 dB to this end by pressing key 21. The additional attenuation is automatically incorporated in the displayed value, i.e. the displayed value corresponds to the input voltage.

4.8 Surface Acoustic Wave Filter (SAW)

A SAW filter can be selected using key 28 to improve the adjacent-channel suppression. This is particularly important when operating in cable systems with continuous channel assignments. In the case of relay receivers, the SAW filter should be omitted because of the tendency to generate ripple.

4.9 Meter

The meter can be used to measure either the RF input level VIN (dBIJV), the video level VVIDEO (Vpp) at the video output or the respective sound carrier deviation sound 1/sound 2 (kHz). The measuring range is selected by pressing keys 32, 34, 36 and 38 and is indicated on the corresponding LEDs 31, 33, 35, 37. The thicker bars on the scale indicate the optimum working range of the EMFT.

4.10 IF Gain Control

The IF control can correct RF input voltage variations from a minimum of 34 dB up to a maximum of approx. 40 dB. Up to 34 dB, the EMFT specifications are guaranteed. Taking into account the automatic RF attenuation, this results in a max. automatic control range of 60 dB. Manual gain control is also selectable. This is done through key 42 with the corresponding LED 40/41 lightning up. The optimum operating point for the IF control can be set using knob 39 on the front panel and the mark "VVIDEO - black triangle" on the meter.

4.11 Zero Reference

In order to check the modulation depth, key 44 can be used to insert a field and line-synchronous zero-reference pulse. In this way, a particular line in the field is exactly blanked. The position can be set internally to 10 to 25 lines following the V pulse using R243 (motherboard). An external zero-reference pulse can also be applied to the rear panel. The pulse amplitude should be at least 1.5 Vpp. A built-in inverter can be used to reverse the phase for the external pulse by inserting jumper X112 into 1-2 (motherboard).

4.12 Selection of Detector

The EMFT has an envelope detector and a synchronous detector with Q signal output (see 3.3). Compared to envelope detection, synchronous detection provides highest signal quality for relay reception and measurements. The detectors are selected using key 47. The LEDs 45/46 indicate which detector is selected.

4.13 Sound Trap

The sound traps in the IF amplifier are switched off by inserting jumper X121 into 2-3 (motherboard). This results in a linear group-delay response. The sound traps can also be switched off via the remote control connection X2.31.

4.14 Loudspeaker

A small loudspeaker is fitted at the front panel for checking the sound. The loudspeaker output is also available at connector X2. In this case jumper X411 must be inserted into 1-3 (motherboard). The volume is adjusted using knob 52. Key 51 is used to connect sound carrier 1 or 2 to the loudspeaker. The LEDs 49/50 indicate the selected sound carrier.

4.15 Indication of Carrier, Pilot and Identification Frequencies

The LEDs 53-58 on the front panel provide further information on the received signal with respect to the carrier, pilot and identification frequencies. The exact meaning of the various LEDs can be obtained from the legend for the front view.

5 Interface Description, Remote Control

5.1 Fundamentals

The EMFT can be remote controlled via an IEC/IEEE interface (option, remote IEC bus; see description of IEC bus board) as well as via the connections X2 and X3 (remote parallel) on the rear panel.

The terms REMOTE and LOCAL have different designations in the description and in the circuit diagrams. These designations are listed here and have identical functions:

REMOTE	LOCAL
FERN	ORT
EXTERN	INTERN

Important points to be observed with remote control:

The EMFT is first switched to REMOTE by a Low level at pin X2.30 or pin X3.1. All front panel settings except the loadspeaker switchover (MONO1/MONO2) and the measured-value switchover (VIN, VVIDEO, DEV SND 1/2) are set to a defined state. This state is identified in the legend for the front and rear views by items printed in bold type and italics and cannot be changed on the front panel.

If the desired settings in remote control mode differ from the defined ones, they must be entered via the remote control interface even if only one function (e.g. zero reference) is to be remote controlled.

The channel number last selected is initially retained; i.e. a new channel number need not be entered if functions other than channel selection are to be remote controlled. If the EMFT is returned to LOCAL, the front panel settings last selected become effective since these are stored by the back-up battery.

A differentiation is made below between clocked and static remote control inputs.

5.2 Clocked inputs

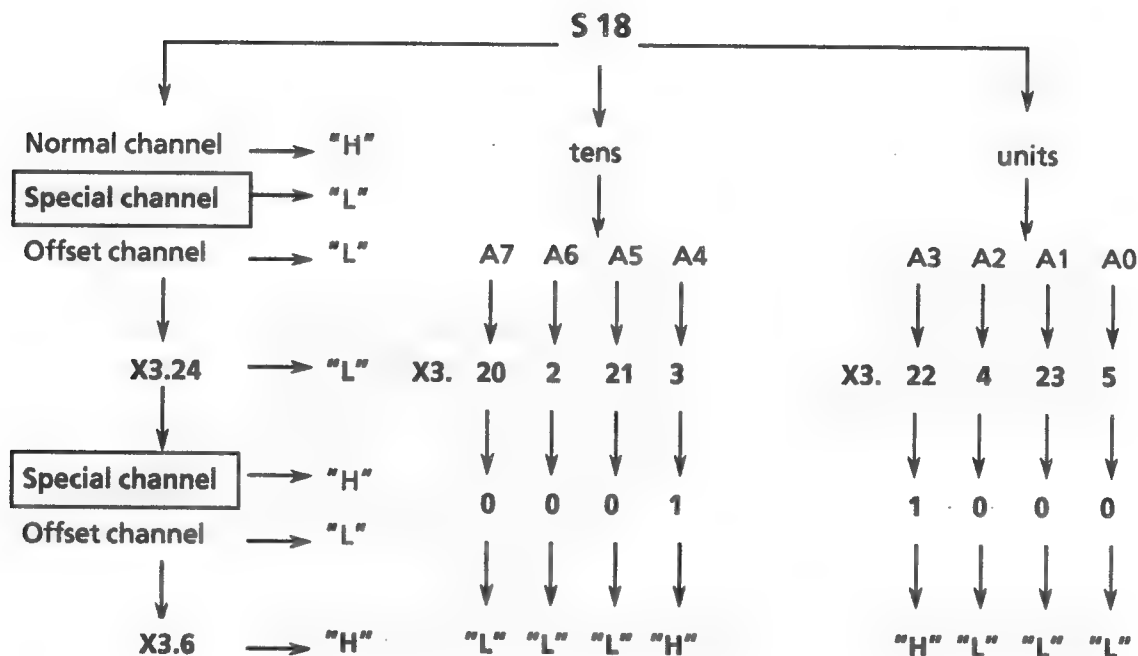
The selected channel number and the associated setting normal/special/offset channel must be entered together with a clock (1-0-1 sequence, 5-V CMOS level).

Example: setting special channel 18 (S18)

- * Switch instrument to remote mode via X2.30 or X3.1.
- * Apply static signals in BCD code to connector X3 according to the list on the following page.
- * This information is read in together with the clock.

EMFT OPERATING INSTRUCTIONS

5.3 Example: setting Special Channel S18



Any other channel can be selected using the above example as reference.

5.4 Static Inputs

These include all other functions which can be remote controlled (except sound traps ON/OFF X2.31) as shown in the following Tables 5.6 and 5.7. The static inputs have a High signal (approx. +5 V) via internal pull-up resistors and are triggered by a 0-V CMOS level or by connecting to ground.

5.5 Signals

The signal outputs have a High level (5-V CMOS level) when a signal is present.

EMFT OPERATING INSTRUCTIONS

5.6 Pin Assignment for X2

X2. 1.3	Not used
4	MONO2/R - audio output
5	Ground for pin 4
6	MONO1/L - audio output
7	Ground for pin 6
8	Not used
9	Ground
10	SYNCHRONOUS ENVELOPE DETECTOR switchover command → "L" = ENVELOPE DETECTOR
11	Ground
12-16	Not used
17	-12 V/max. 200 mA power supply for telecontrol system
18	Not used
19	+ 12 V/max. 200 mA power supply for telecontrol system
20	Loudspeaker output, only active if X411: 2-3 (motherboard)
21	NO PILOT signal → "H"
22	STEREO signal → "H"
23	VIN display - measured-value output for external display of RF input voltage

Voltage at X2.23 in V	0	0.83	1.66	2.49	3.32	4.16	5.0
Indication in dBμV	40	50	60	70	80	90	100

24	Ground for pin 23
25	DUAL SOUND signal → "H"
26	NO SOUND CARRIER 1 signal → "H"
27	NO SOUND CARRIER 2 signal → "H"
28	NO VISION CARRIER signal → "H"
29	ZERO REFERENCE ON command → "L"
30	REMOTE/LOCAL switchover command; EXT. → "L" see X3 pin
31	SOUND TRAP OFF command → "L". Note: no CMOS or TTL level in this case, i.e. apply -12 V to ground (relay winding, high current drain)

EMFT OPERATING INSTRUCTIONS

5.7 Pin Assignment for X3

X3.	1	LOCAL/REMOTE switchover command; EXT. → "L", the REMOTE LED 66 lights up	
	20	Z3 → A7	Tens (BCD)
	2	Z2 → A6	"
	21	Z1 → A5	"
	3	Z0 → A4	"
	22	E3 → A3	Units (BCD)
	4	E2 → A2	"
	23	E1 → A1	"
	5	E0 → A0	"
	24	NORMAL CHANNEL/SPECIAL CHANNEL/OFFSET CHANNEL switchover command in conjunction with X3.6, special/offset channel → "L" and additional clock	
	6	SPECIAL CHANNEL/OFFSET CHANNEL switchover command in conjunction with X3.24, offset channel → "L" and additional clock	
	25	Ground	
	7	CLOCK (1-0-1)	
	26	Ground	
	8	ACKNOWLEDGEMENT approx. 0.2 ms	
		The SEL signal (read command for synthesizer) is available as the acknowledgement, i.e. a change in channel number has taken place	
	27	RF/IF switchover command, IF → "L" level	
	9	50 Ω/75 Ω switchover command, 75 Ω → "L" level	
	28	AUTOMATIC RF ATTENUATION switch-on command	
		Automatic RF attenuation OFF → "L" level	
	10	Switch-on command for the SAW filter, SAW ON → "L" level	
	29	REDUCE IF GAIN switch-on command, ON → "L" level	
	11	ATTENUATION	20 dB switch-on command ON → "L" level
	30	"	10 dB "
	12	"	0 dB "
	31	"	20 dB signal → "H" level
	13	"	10 dB "
	32	"	0 dB "
	14	SYNCHRONOUS ENVELOPE DETECTOR switchover command	
		ENVEL ON → "L" level	
	33	ZERO REFERENCE switch-on command, ON → "L" level	
	15	Not used	
	34	"	
	16	"	
	35	"	
	17	-12 V	Power supply for telecontrol system
	36	Not used	
	18	-5 V	"
	37	Not used	
	19	+ 12 V	"

5.8 Inputs on X2 and X3

*	LOCAL/REMOTE	X2.30 and X3.1
*	ZERO REFERENCE	X2.29 and X3.33
*	SYNC/ENVEL CURVE	X2.10 and X3.14

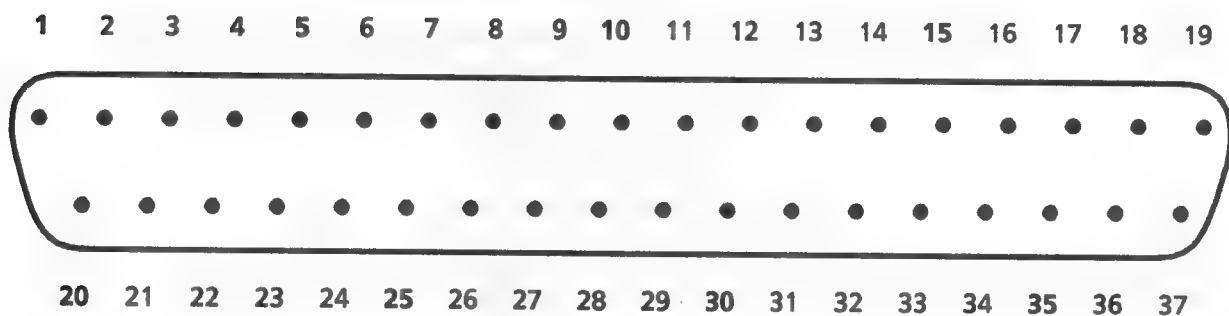
5.9 Power Supply for Telecontrol System

Operating voltages of -12 V, +12 V and +5 V with approx. 200 mA each are available at the two connectors X2 and X3.

5.10 Remote Control via IEC/IEEE Connector

Inputs must not be connected to X2 and X3 if remote control is via the IEC/IEEE connector. If this is necessary, however, because a bus board is fitted, connector X116 (interface between IEC bus/instrument) must be disconnected.

5.11 View of X2 and X3 contacts



View of contacts

EMFT OPERATING INSTRUCTIONS

6 Coding Options

Coding jumper	Module	Position	Function
X 187	RF section	1-2 2-3	Normal operation 100 MHz trap OFF
X 361	IF section	1-2 1-2open	Normal operation Zero reference not in operation
X 371	IF section	1-2 2-3	Normal operation Switchover to envelope curve suppressed
X 121	Motherboard	1-2 2-3	Normal operation Sound trap OFF
X 122	Motherboard	1-2 2-3	Normal operation Switchover to IF input suppressed
X 127	Motherboard	1-2 2-3	Normal operation Control voltage not sampled
X 251	Motherboard	1-2 2-3	Normal operation, inverter for external zero-reference pulse ON External zero reference pulse not inverted
X 327 sound 1 X 331 sound 2	Motherboard	1-2 2-3	Normal operation Squelch switched off
X 409 sound 1 X 415 sound 2	Motherboard	1-2 2-3	Normal operation Deemphasis OFF
X 411	Motherboard	1-2 2-3	Normal operation Internal loudspeaker switched off, AF output at X2.20 (external connector)
X 413	Motherboard	1-2 2-3	Normal operation SYNC/ENVEL and ZERO REF ON for remote control, REMOTE LED 67 on
X 25	Synthesizer	1-2 2-3	Channel assignment standard B/G Channel assignment standard M
X 20	Power supply	1-2 2-3	Normal operation Back-up battery + 5V _{BAT} disconnected
X 40	Power supply	1-2 2-3	Normal operation Blower OFF

EMFT OPERATING INSTRUCCIONES

7 Channel Assignment (Vision Carrier Frequency)

7.1 Standard B/G

DIS- PLAY	CHANNEL FREQ/MHZ	FILTER	SPECIAL CHANNEL FREQ/MHZ	FILTER	OFFSET CHANNEL FREQ/MHZ	FILTER
00:	-		S20 294,25 (3)		-	
01:	-		S 1 105,25 (1)		-	
02:	K 2 48,25 (0)		S 2 112,25 (1)		K 2 48,25 (0)	
03:	K 3 55,25 (0)		S 3 119,25 (1)		K 3 55,25 (0)	
04:	K 4 62,25 (0)		S 4 126,25 (1)		K 4 62,25 (0)	
05:	K 5 175,25 (2)		S 5 133,25 (1)		K 5 175,25 (2)	
06:	K 6 182,25 (2)		S 6 140,25 (1)		K 6 182,25 (2)	
07:	K 7 189,25 (2)		S 7 147,25 (1)		K 7 189,25 (2)	
08:	K 8 196,25 (2)		S 8 154,25 (1)		K 8 196,25 (2)	
09:	K 9 203,25 (2)		S 9 161,25 (1)		K 9 203,25 (2)	
10:	K10 210,25 (2)		S10 168,25 (1)		K10 210,25 (2)	
11:	K11 217,25 (2)		S11 231,25 (3)		K11 217,25 (2)	
12:	K12 224,25 (2)		S12 238,25 (3)		K12 224,25 (2)	
13:	-		S13 245,25 (3)		-	
14:	-		S14 252,25 (3)		-	
15:	-		S15 259,25 (3)		-	
16:	-		S16 266,25 (3)		-	
17:	-		S17 273,25 (3)		-	
18:	-		S18 280,25 (3)		-	
19:	-		S19 287,25 (3)		-	
20:	-		S20 294,25 (3)		-	
21:	K21 471,25 (6)		S21 303,25 (4)		K21 471,25 (6)	
22:	K22 479,25 (6)		S22 311,25 (4)		K22 479,25 (6)	
23:	K23 487,25 (6)		S23 319,25 (4)		K23 487,25 (6)	
24:	K24 495,25 (6)		S24 327,25 (4)		K24 495,25 (6)	
25:	K25 503,25 (6)		S25 335,25 (4)		K25 503,25 (6)	
26:	K26 511,25 (6)		S26 343,25 (4)		K26 511,25 (6)	
27:	K27 519,25 (6)		S27 351,25 (4)		K27 519,25 (6)	
28:	K28 527,25 (6)		S28 359,25 (4)		K28 527,25 (6)	
29:	K29 535,25 (6)		S29 367,25 (4)		K29 535,25 (6)	
30:	K30 543,25 (6)		S30 375,25 (5)		K30 543,25 (6)	
31:	K31 551,25 (6)		S31 383,25 (5)		K31 551,25 (6)	
32:	K32 559,25 (6)		S32 391,25 (5)		K32 559,25 (6)	
33:	K33 567,25 (6)		S33 399,25 (5)		K33 567,25 (6)	
34:	K34 575,25 (6)		S34 407,25 (5)		K34 575,25 (6)	
35:	K35 583,25 (6)		S35 415,25 (5)		K35 583,25 (6)	
36:	K36 591,25 (6)		S36 423,25 (5)		K36 591,25 (6)	
37:	K37 599,25 (6)		S37 431,25 (5)		K37 599,25 (6)	
38:	K38 607,25 (6)		S38 439,25 (5)		K38 607,25 (6)	
39:	K39 615,25 (6)		S39 447,25 (5)		K39 615,25 (6)	
40:	K40 623,25 (7)		S40 455,25 (5)		K40 623,25 (7)	
41:	K41 631,25 (7)		S41 463,25 (5)		K41 631,25 (7)	
42:	K42 639,25 (7)		-		K42 639,25 (7)	
43:	K43 647,25 (7)		-		K43 647,25 (7)	

EMFT OPERATING INSTRUCTIONS

44:	K44	655,25 (7)	-	K44	655,25 (7)
45:	K45	663,25 (7)	-	K45	663,25 (7)
46:	K46	671,25 (7)	-	K46	671,25 (7)
47:	K47	679,25 (7)	-	K47	679,25 (7)
48:	K48	687,25 (7)	-	K48	687,25 (7)
49:	K49	695,25 (7)	-	K49	695,25 (7)
50:	K50	703,25 (7)	-	K50	703,25 (7)
51:	K51	711,25 (7)	-	K51	711,25 (7)
52:	K52	719,25 (7)	-	K52	719,25 (7)
53:	K53	727,25 (7)	-	K53	727,25 (7)
54:	K54	735,25 (7)	-	K54	735,25 (7)
55:	K55	743,25 (7)	-	K55	743,25 (7)
56:	K56	751,25 (7)	-	K56	751,25 (7)
57:	K57	759,25 (7)	-	K57	759,25 (7)
58:	K58	767,25 (7)	-	K58	767,25 (7)
59:	K59	775,25 (7)	-	K59	775,25 (7)
60:	K60	783,25 (7)	-	K60	783,25 (7)
61:	K61	791,25 (7)	-	K61	791,25 (7)
62:	K62	799,25 (7)	-	K62	799,25 (7)
63:	K63	807,25 (7)	-	K63	807,25 (7)
64:	K64	815,25 (7)	-	K64	815,25 (7)
65:	K65	823,25 (7)	-	K65	823,25 (7)
66:	K66	831,25 (7)	-	K66	831,25 (7)
67:	K67	839,25 (7)	-	K67	839,25 (7)
68:	K68	847,25 (7)	-	K68	847,25 (7)
69:	K69	855,25 (7)	-	K69	855,25 (7)
70-80:	free		-		
81:	-		-	S 1	105,25 (1)
82:	-		-	S 2	112,25 (1)
83:	-		-	S 3	119,25 (1)
84:	-		-	S 4	126,25 (1)
85:	-		-	S 5	133,25 (1)
86:	-		-	S 6	140,25 (1)
87:	-		-	S 7	147,25 (1)
88:	-		-	S 8	154,25 (1)
89:	-		-	S 9	161,25 (1)
90:	-		-	S10	168,25 (1)
91:	-		-	S11	231,25 (3)
92:	-		-	S12	238,25 (3)
93:	-		-	S13	245,25 (3)
94:	-		-	S14	252,25 (3)
95:	-		-	S15	259,25 (3)
96:	-		-	S16	266,25 (3)
97:	-		-	S17	273,25 (3)
98:	-		-	S18	280,25 (3)
99:	-		-	S19	287,25 (3)

EMFT OPERATING INSTRUCCIONES

7.2 STANDARD M:

DIS-	CHANNEL	SPECIAL CHANNEL	OFFSET CHANNEL
PLAY	FREQ/MHZ FILTER	FREQ/MHZ FILTER	FREQ/MHZ FILTER
00:	-	-	-
01:	-	-	-
02:	A 2 55,25 (0)	C 2 55,25 (0)	H 2 54 (0)
03:	A 3 61,25 (0)	C 3 61,25 (0)	H 3 60 (0)
04:	A 4 67,25 (0)	C 4 67,25 (0)	H 4 66 (0)
05:	A 5 77,25 (0)	C 5 77,25 (0)	H 5 78 (0)
06:	A 6 83,25 (0)	C 6 83,25 (0)	H 6 84 (0)
07:	A 7 175,25 (2)	C 7 175,25 (2)	H 7 174 (2)
08:	A 8 181,25 (2)	C 8 181,25 (2)	H 8 180 (2)
09:	A 9 187,25 (2)	C 9 187,25 (2)	H 9 186 (2)
10:	A10 193,25 (2)	C10 193,25 (2)	H10 192 (2)
11:	A11 199,25 (2)	C11 199,25 (2)	H11 198 (2)
12:	A12 205,25 (2)	C12 205,25 (2)	H12 204 (2)
13:	A13 211,25 (2)	C13 211,25 (2)	H13 210 (2)
14:	A14 471,25 (6)	C14 121,25 (1)	H14 120 (1)
15:	A15 477,25 (6)	C15 127,25 (1)	H15 126 (1)
16:	A16 483,25 (6)	C16 133,25 (1)	H16 132 (1)
17:	A17 489,25 (6)	C17 139,25 (1)	H17 138 (1)
18:	A18 495,25 (6)	C18 145,25 (1)	H18 144 (1)
19:	A19 501,25 (6)	C19 151,25 (1)	H19 150 (1)
20:	A20 507,25 (6)	C20 157,25 (1)	H20 156 (1)
21:	A21 513,25 (6)	C21 163,25 (1)	H21 162 (1)
22:	A22 519,25 (6)	C22 169,25 (1)	H22 168 (1)
23:	A23 525,25 (6)	C23 217,25 (2)	H23 216 (2)
24:	A24 531,25 (6)	C24 223,25 (2)	H24 222 (2)
25:	A25 537,25 (6)	C25 229,25 (3)	H25 228 (3)
26:	A26 543,25 (6)	C26 235,25 (3)	H26 234 (3)
27:	A27 549,25 (6)	C27 241,25 (3)	H27 240 (3)
28:	A28 555,25 (6)	C28 247,25 (3)	H28 246 (3)
29:	A29 561,25 (6)	C29 253,25 (3)	H29 252 (3)
30:	A30 567,25 (6)	C30 259,25 (3)	H30 258 (3)
31:	A31 573,25 (6)	C31 265,25 (3)	H31 264 (3)
32:	A32 579,25 (6)	C32 271,25 (3)	H32 270 (3)
33:	A33 585,25 (6)	C33 277,25 (3)	H33 276 (3)
34:	A34 591,25 (6)	C34 283,25 (3)	H34 282 (3)
35:	A35 597,25 (6)	C35 289,25 (3)	H35 288 (3)
36:	A36 603,25 (6)	C36 295,25 (3)	H36 294 (3)
37:	A37 609,25 (6)	C37 301,25 (4)	H37 300 (4)
38:	A38 615,25 (6)	C38 307,25 (4)	H38 306 (4)
39:	A39 621,25 (7)	C39 313,25 (4)	H39 312 (4)

EMFT OPERATING INSTRUCTIONS

40:	A40	627,25 (7)	C40	319,25 (4)	H40	318 (4)
41:	A41	633,25 (7)	C41	325,25 (4)	H41	324 (4)
42:	A42	639,25 (7)	C42	331,25 (4)	H42	330 (4)
43:	A43	645,25 (7)	C43	337,25 (4)	H43	336 (4)
44:	A44	651,25 (7)	C44	343,25 (4)	H44	342 (4)
45:	A45	657,25 (7)	C45	349,25 (4)	H45	348 (4)
46:	A46	663,25 (7)	C46	355,25 (4)	H46	354 (4)
47:	A47	669,25 (7)	C47	361,25 (4)	H47	360 (4)
48:	A48	675,25 (7)	C48	367,25 (4)	H48	366 (4)
49:	A49	681,25 (7)	C49	373,25 (5)	H49	372 (5)
50:	A50	687,25 (7)	C50	379,25 (5)	H50	378 (5)
51:	A51	693,25 (7)	C51	385,25 (5)	H51	384 (5)
52:	A52	699,25 (7)	C52	391,25 (5)	H52	390 (5)
53:	A53	705,25 (7)	C53	397,25 (5)	H53	396 (5)
54:	A54	711,25 (7)	C54	73,25 (0)	H54	72 (0)
55:	A55	717,25 (7)	C55	79,25 (0)	H55	78 (0)
56:	A56	723,25 (7)	C56	85,25 (0)	H56	84 (0)
57:	A57	729,25 (7)	C57	91,25 (0)	H57	90 (0)
58:	A58	735,25 (7)	C58	97,25 (0)	H58	96 (0)
59:	A59	741,25 (7)	C59	103,25 (1)	H59	102 (1)
60:	A60	747,25 (7)	C60	109,25 (1)	H60	108 (1)
61:	A61	753,25 (7)	C61	115,25 (1)	H61	114 (1)
62:	A62	759,25 (7)	C62	403,25 (5)	H62	403 (5)
63:	A63	765,25 (7)	C63	409,25 (5)	H63	409 (5)
64:	A64	771,25 (7)	C64	415,25 (5)	H64	415 (5)
65:	A65	777,25 (7)	C65	421,25 (5)	H65	421 (5)
66:	A66	783,25 (7)	C66	427,25 (5)	H66	427 (5)
67:	A67	789,25 (7)	C67	433,25 (5)	H67	433 (5)
68:	A68	795,25 (7)	C68	439,25 (5)	H68	439 (5)
69:	A69	801,25 (7)	C69	445,25 (5)	H69	445 (5)
70:	A70	807,25 (7)	-	-	-	-
71:	A71	813,25 (7)	-	-	-	-
72:	A72	819,25 (7)	-	-	-	-
73:	A73	825,25 (7)	-	-	-	-
74:	A74	831,25 (7)	-	-	-	-
75:	A75	837,25 (7)	-	-	-	-
76:	A76	843,25 (7)	-	-	-	-
77:	A77	849,25 (7)	-	-	-	-
78:	A78	855,25 (7)	-	-	-	-
79:	A79	861,25 (7)	-	-	-	-
80:	A80	867,25 (7)	-	-	-	-
81:	A81	873,25 (7)	-	-	-	-
82:	A82	879,25 (7)	-	-	-	-
83:	A83	885,25 (7)	-	-	-	-
84-99:	free	-	-	-	-	-

8 Legend for Front and Rear Views

Front panel

Item	Control/ indicator	Inscription	Function
1	LED yellow	REM	Lights up with remote control (only with IEC 625 option)
2	LED yellow	LLO	Lights up with local operation (only with IEC 625 option)
3	Key	LOCAL	Switchover from local operation to remote (only with IEC 625 option)
4	LED green	0 dB	<i>Lights up with 0-dB input attenuation</i>
5	LED green	10 dB	Lights up with 10-dB input attenuation
6	LED green	20 dB	Lights up with 20-dB input attenuation
7	Key	RF INP ATTENUATION	Selection of RF input attenuation 0/10/20 dB
8	LED green	RF 50 Ω	<i>Lights up if 50-Ω RF input is selected</i>
9	LED green	RF 75 Ω	Lights up if 75- Ω RF input is selected
10	LED yellow	IF	Lights up if IF input is selected
11	Key	INPUT	Selection of measuring input RF 50 Ω / RF 75 Ω /IF
12	LED green	MAN	Lights up if manual RF input attenuation is selected
13	LED green	AUTO	Lights up if automatic RF input attenuation is selected
14	Key	AUTO	Switchover from manual to automatic RF input attenuation
15	LED green	NORMAL	<i>Lights up if channel is received in band I, III, IV or V</i>

EMFT OPERATING INSTRUCTIONS

Front panel

Item	Control/ indicator	Inscription	Function
16	LED green	SPEC CHAN	Lights up if special channel is received
17	LED green	OFFSET	Lights up if offset channel is received (optional customer-specific program.)
18	Key	TV CHANNEL	Switchover from normal to special or offset channel mode
19	Key	SEARCH	Starts automatic search
20	LED yellow	10 dB ON	Lights up if 10-dB IF attenuation is selec- ted (demodulator mode)
21	Key	MODE: DEMOD	Selection of 10-dB IF attenuation
22	7-segment		Digital display of channel number
23	Key	Upward arrow	TV channel selection in upward steps of 1
24	Key	Upward arrow	TV channel selection in upward steps of 10
25	Key	Downward arrow	TV channel selection in downward steps of 1
26	Key	Downward arrow	TV channel selection in downward steps of 10
27	LED green	SAW ON	Lights up if SAW filter is selected
28	Key	ADJ CHAN SUPPR	Selection of SAW filter (improved adjacent- channel suppression)
29	Meter	Calibrated scale	Indication of input level, input voltage, modulation deviation of sound signal
30	Screw		Mechanical zero adjustment
31	LED green	V _{VIDEO}	Lights up if measuring range "V _{VIDEO} " is selected
32	Key	V _{VIDEO}	Selection of measuring range "V _{VIDEO} "

EMFT OPERATING INSTRUCTIONS

Front panel

Item	Control/ indicator	Inscription	Function
33	LED green	V _{IN}	Lights up if measuring range "V _{IN} " is selected
34	Key	V _{IN}	Selection of measuring range "V _{IN} "
35	LED green	SND1	Lights up if measuring range "Deviation of sound 1" is selected
36	Key	SND1	Selection of measuring range "Deviation of sound 1"
37	LED green	SND2	Lights up if measuring range "Deviation of sound 2" is selected
38	Key	SND2	Selection of measuring range "Deviation of sound 2"
39	Knob		Adjustment of gain control voltage
40	LED green	AUTO	Lights up with AGC
41	LED Yellow	MAN	Lights up with manual control
42	Key	AUTO/MAN	Switchover from autom. to manual control
43	LED yellow	ON	Lights up with zero reference selected
44	Key	ZERO REF	Selection of zero reference
45	LED green	SYNCHR	Lights up in mode "Synchronous detection"
46	LED yellow	ENVEL	Lights up in mode "Envelope detection"
47	Key	DEMOM	Selection of detector type
48	Loudspeaker		
49	LED green	MONO1/L	Lights up if sound 1 or the left channel is connected to the loudspeaker
50	LED green	MONO2/R	Lights up if sound 2 or the right channel is connected to the loudspeaker

EMFT OPERATING INSTRUCTIONS

Front panel

Item	Control/ indicator	Inscription	Function
51	Key	Mono 1/2 - L/R	Switchover of sound 1/2 - L/R on loudspeaker
52	Knob		Volume control
53	LED green	STEREO	Lights up if stereo identification frequency is present
54	LED red	NO VIS CARR	Lights up if no vision carrier is present
55	LED red	NO PILOT	Lights up if no pilot is present
56	LED green	DUAL SOUND	Lights up if dual-sound identification frequency is present
57	LED red	NO SND CARR 1	Lights up if no carrier is present for sound 1
58	LED red	NO SND CARR 2	Lights up if no carrier is present for sound 2
59	BNC socket	Q-SIGNAL	Q signal output 75 Ω
60	Control		Control for amplitude of video output signal
61	BNC connector	VIDEO	Video output 75 Ω
62	Control		Control for amplitude of sound 1 or left channel
63	BNC socket	MONO 1/L	Audio output of sound 1 or left channel
64	Control		Control for amplitude of sound 2 or right channel
65	BNC controller	MONO 2/R	Audio output of sound 2 or right channel
66	LED yellow	REMOTE	Lights up with remote control (connector X3)
67	LED green		Power on indication
68	LED red	FUSE BLOWN	Lights up if primary fuse is blown
69	Key		Switches power on

EMFT OPERATING INSTRUCTIONS

Rear panel

Item	Control/ indicator	Inscription	Function
101	Fuse holder	F1	Primary fuse
102	Voltage selector	100/120/220/ 240	AC power selector
103	Plug		AC power connection
104	BNC connector	X5.1 RF INPUT 50 Ω	RF input 50 Ω
105	BNC connector	X5.2 RF INPUT 75 Ω	RF input 75 Ω
106	BNC connector	X5.3 IF INPUT	IF input 75 Ω
107	BNC connector	X5.4 IF OUTPUT	IF output 75 Ω
108	BNC connector	X4.1	Spare
109	BNC connector	X4.2 ZERO REF PULSE INPUT	Zero reference pulse input
110	BNC connector	X4.3 Q-SIGNAL OUTPUT	Q signal output 75 Ω
111	BNC connector	X4.4 VIDEO OUTPUT	Video output 75 Ω
112	37-contact connector	X2	Remote control connection - commands, signals, audio outputs, loudspeaker output
113	37-contact connector	X3	Remote control connection - commands, signals, power supply for remote control system





ROHDE & SCHWARZ

Unternehmensbereich
Rundfunk- und Fernsehtechnik

Service Manual

TV Test Receiver

EMFT

821.4019

Table of Contents

Service instructions	821.4019	7.1 - 7.2
Adjustment of power supply	821.4519	2.1
Adjustment of motherboard	821.8514	2.1 - 2.6
Adjustment of IF section/video amplifier	821.7518	2.1 - 2.10
Adjustment of RF section	821.9010	2.1 - 2.7
Figs for adjustment of RF section	821.9010	3.1 - 3.5
Synthesizer adjustment	821.9710	2.1
Measuring instruments required	821.4019	8.1

Appendix:

Figs for service manual	821.4019	7.3 - 7.5
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1 Opening the Unit

- 1.1 Remove 4 screws (a) at rear of instrument (Fig. 1)
- 1.2 Remove rear feet (b) (Fig. 1)
- 1.3 Remove top part of housing (c), remove bottom part of housing (d) (Fig. 1)
- 1.4 Loosen 2 screws (e), hinge out IF section (f) and latch in place (Fig. 2)
- 1.5 Loosen 2 screws (g), hinge out RF section (h) and latch in place (Fig. 3)
- 1.6 Caution: do not touch between the angle pieces (i) on the righthand side of the instrument with the IF or RF section hinged out.

2 Removal of Power Supply

- 2.1 Pull out power switch push rod (k) (Fig. 3)
- 2.2 Open up plug X21 (l) on motherboard and disconnect (Fig. 3)
- 2.3 Remove screws (m) at rear of instrument (below left foot) (Figs. 1, 4)
- 2.4 Remove screws (n) at righthand side of instrument (Figs. 2, 4)
- 2.5 Place instrument with rear panel protruding beyond the edge of the bench, swing down power supply and remove (Fig. 5).

3 Opening the Front Panels

- 3.1 Remove 2 screws (o), swing out synthesizer front panel to right (Fig. 6)
- 3.2 Remove 2 screws (p), swing out motherboard front panel to left (Fig. 6).

4 Advice on Troubleshooting

For troubleshooting, first use the overall block diagram to find the faulty module (board).

Once the faulty module has been found, reference can be found in the respective summary of circuit documents to the applicable block diagram in Register 3 and possibly to a separate block diagram.

Use the circuit diagram and the detailed description of the module to initially check the input parameters. If these are OK, check the individual functions of the module. If an input signal is missing, look for the source and measure the signal at its output. The block diagrams help to localize a fault.

A block diagram 821.4019 sheet 10.1 in Register 3 is useful for examining the power supply. Every voltage can be followed up to the respective IC with the pin numbers given. Low-value resistors connected in series are not shown and must be taken into account during troubleshooting.

The summary of circuit documents is followed by circuit diagrams, board layouts and components lists.

5 Precautionary Measures with CMOS Circuits

The CMOS circuits used are protected internally against small static discharges by clamping diodes to the positive voltage and to 0 V as well as by series resistors. Contact to ground must always be made before touching the circuits (contact frame or ground on card). Modules or individual components may only be removed with the power supply switched off. Boards must be packed in conductive material during transport.

When carrying out measurements ensure that test prods do not produce short-circuits between neighbouring points of the integrated circuits and other components. Short-circuits could destroy integrated circuits.

It is not admissible to connect external voltages to the outputs of logic circuits. Soldering on PCBs or other components may only be carried out with the instrument switched off. Do not forget the + 5 V_{BAT} voltage on components with a battery back-up. Soldering irons with isolating transformers should always be used.

6 ID Numbers

The basic instrument and the individual modules each have their own ID numbers. These numbers are shown on every sheet in the description (mostly in the bottom line) and help to assign individual components to the modules. The instrument model is shown in the 8th and 9th positions of the ID number and is described in the parts list of Register 3.

Basic instrument	821.4019
RF section	821.9010
IF section/video amplifier	821.7518
Synthesizer	821.9710
Display board for synthesizer	821.9862
Motherboard	821.8514
Display board for motherboard	821.8366
Power supply	822.0917
Power supply board	821.4519
IEC/IEEE bus interface (option)	822.1513

EMF ADJUSTMENT INSTRUCTIONS, POWER SUPPLY

Test	Mode	Default setting	Measuring instrument	Signal input	Meas. instr.	Test point	Specific.	Adjustment
Output voltage					14	W21.2	30V \pm 1V	Check
						W21.3	+ 5V > + 3.2V	Check with instrument switched off
						W21.4, 5, 12, 13	+ 12V \pm 0.3V	Adjust using R30
						W21.6, 11	+ 5V + 0.2/-0.1V	Adjust using R20
						W21.7, 10	Approx. + 5.7V	Check without load
						W21.8, 9	-12V \pm 0.3V	Adjust using R40

EMF ADJUSTMENT INSTRUCTIONS, MOTHER BOARD

Test	EMF mode	Default setting	Meas. Instr.	Signal input	Meas. Instr.	Test point	Specific.	Adjustment
Heating of N101					18	Heating block	+ 60°C	Measure heating block temperature, approx. + 60°C
IF / RF crosstalk	IF		8	IF input X5.3 38.9 MHz 200 mV	16	X101		Disconnect cable W101 from X101 and connect analyzer Reference level with IF mode (selectable in RF section or X122:1-2), X113 terminated by 50 Ω (RF section)
	RF						typ. -80dB	Switch to RF mode (RF section or X122:2-3), measure crosstalk X122:1-2, connect cable W101 to X101

EMF ADJUSTMENT INSTRUCTIONS, MOTHERBOARD

Test	EMF mode	Default setting	Meas. Instr.	Signal input	Meas. Instr.	Test point	Specific.	Adjustment
Measurement of input voltage and AFC		R103→2/3, R119,R133→1/2	1	X5.3 100 mV	1-TK	P101	38.9MHz ± 200 kHz	Adjust bandpass filter using L101, L102
			8	X5.3 38.9 MHz 100 mV	14	P103,P104	0V	Adjust AFC voltage difference between P103 and P104 using L103
						V _{IN} display	100 mV	Adjust display using R133
						V _{IN} display P102	10 mV	Adjust display using R119 Repeat 10 mV and 100 mV settings until both displays are correct. R103 can be used to set an optimum linearity display if necessary
Typ. values X5.3 / 38.9 MHz: P102 1 mV + 1.2 V 10 mV + 2.1 V 100 mV + 2.9 V 200 mV + 3.2 V 1 V + 3.9 V								

EMF ADJUSTMENT INSTRUCTIONS, MOTHER BOARD

Test	EMF mode	Default setting	Meas. Instr.	Signal input	Meas. Instr.	Test point	Specific.	Adjustment
<i>Display of vision carrier missing</i>			8	X5.3 38.9 MHz 2 mV	14		LED indication	Adjust threshold using R185 such that LED lights up
<i>AF section</i>		R383, R397, R423, R459, R481 → 1/2 R118, R123 (front panel) → remove 1/2 X405, X409, X407, X415						
<i>20-kHz low pass, sound 1</i>			9	X405.2-3 54.688 kHz approx. 300 mV	6	Mono-1 output X8	min.	Adjust to minimum amplitude using L348 Insert X409
<i>60-kHz lowpass, deviation display</i>			9	X405.2-3 54.688 kHz approx. 300 mV	14 or instr.	N271.14	max.	Rotate core of L385 clockwise and then slowly counterclockwise until maximum level is displayed

EMF ADJUSTMENT INSTRUCTIONS, MOTHERBOARD

Test	EMF mode	Default setting	Meas. Instr.	Signal input	Meas. Instr.	Test point	Specific.	Adjustment
20-kHz lowpass, sound 2			9	X407.2-3 54.688 kHz approx. 400 mV	6	Mono-2 output X9	min.	Adjust to minimum amplitude using 371 Insert X415
				approx. 100 mV	6-TK	P149	max.	Adjust to maximum amplitude using L372, L373
AF gain, sound 2			9	X407.2-3 500 Hz 160 mV	10 Instr.	P147 Mono 2-X9	0.5 V + 6 dBm 30 kHz	Adjust using R423 Adjust R123 (front panel) Adjust deviation display using R397 Check loudspeaker
				X407.2 15 kHz 160 mV	10	Mono 2-X9	-7.6 ± 1dBm	Check deemphasis 50 µs Check 30-kHz deviation display Insert X407: 1-2

EMF ADJUSTMENT INSTRUCTIONS, MOTHER BOARD

Test	EMF mode	Default setting	Meas. Instr.	Signal input	Meas. Instr.	Test point	Specific.	Adjustment
AF gain, sound 1			9	X405.2-3 500 Hz 160 mV	10 Instr.	P145 Mono 1-X8	0.5 V + 6 dBm 30 kHz	Adjust using R383, Adjust R118 (front panel) Check deviation display Check loudspeaker
			9	X405.2-3 15 kHz 160 mV	10	Mono 1-X8	-7.6 ± 1 dBm	Check deemphasis 50 µs, Check 30-kHz deviation display Insert X405: 1-2
Demodulator sound 1		Remove X325, X327	1	X325.2-3 5.5 MHz 20 mV	1-TK	P135	max.	L264 → max. at 5.5 MHz
						P137	max. sym.	L273 → max. at 5.5 MHz L271 → tuning to 5.5 MHz insert X325: 1-2, X327: 1-2
Demodulator sound 2		Remove X329, X331	1	X329.2 5.74 MHz 20 mV	1-TK	P141	max.	L284 → max. at 5.74 MHz
						P143	max. sym.	L291 → max. at 5.74 MHz L293 → tuning to 5.74 MHz Insert X329: 1-2, X331: 1-2
Demodulator sound 1		Loosen W103 from X103 Remove X327	MA1	X103 f _{mod} 500 Hz ± 50 kHz deviation	6-TK	P133	150 mV _{pp}	L263 → max. at 38.9 MHz
						P135	5-6 V _{pp}	L264 → max. level 5.5 MHz
					11	Mono 1-X8	Type K = 0.1 %	L273 → max. display of level, min. distortion L271 → min. distortion, symmetrical S curve
					10	P145	0.5 V _{rms}	R383 Insert X327: 1-2 Connect cable W103 to X103

EMF ADJUSTMENT INSTRUCTIONS, MOTHERBOARD

Test	EMF mode	Default setting	Meas. Instr.	Signal input	Meas. Instr.	Test point	Specific.	Adjustment
Demodulator sound 2		Separate W104 from X104 Remove X331	19	X104 f_{mod} 500 Hz ± 50 kHz deviation	6-TK	P139	max.	L283 → max. at 38.9 MHz, approx. 150mV _{pp}
						P141	max.	L284 → max. level 5.74 MHz, 5 - 6 V _{pp}
					11	Mono 2-X9	Type K = 0.1 %	L291 → max. display of level, min. distortion L293 → min distortion, symmetrical S curve
					10	P147	0.5 V _{rms}	R423
Identification decoder	Pilot	Remove X331	3	X104 TT 2, stereo ON TT 1 OFF	6-TK	P149	max.	L372, L373 → max. level approx. 70 mV _{pp}
						P151	max., LED	L374 → max. level approx. 0.15 V _{pp} , LED display
	Dual sound					P155	"	R481 → max. level at 274.1 Hz approx. 5 V _{pp} , LED display
	Stereo					P153	"	R459 → max. level at 117.5 Hz approx. 5 V _{pp} , LED display Insert X331: 1-2 Connect cable W104 to X104

EMF ... ADJUSTMENT INSTRUCTIONS, IF SECTION / VIDEO AMPLIFIER

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
<i>Return loss, 50-Ω IF input</i>	MAN	R102(front panel) → 1/2	1-BR	X5.3 approx. 100mV 30-40 MHz			≥ 20dB	In range 32 to 40 MHz
<i>Return loss, 50-Ω IF output</i>	MAN		1-BR	X5.4 approx. 100mV 30-40 MHz			≥ 12dB	In range 32 to 40 MHz
<i>Return loss, 75-Ω video input</i>		R445(IF sect.), R458 (front panel) → 1/2	2	X6; X4.4 approx. 200mV			≥ 20dB	In range 0 to 6 MHz
<i>Return loss, 75-Ω Q output</i>		R267(mother-board) → 1/2	2	X7; X4.3 approx. 200mV			≥ 20dB	In range 0 to 6 MHz
<i>Video amplifier</i>	ENVEL.	R384, R399, R403, R412, R423, R428 (IF sect.) → 1/2 Insert X365:2-3 Remove X366	2	P364	2	X6		R428 → adjust to flat frequency response (0 dB) in range 0 to 6 MHz Insert X366 R399 → approx. + 0.5 dB boosting at 6 MHz Insert X365:1-2
<i>IF bandpass</i>	ENVEL SOUND TRAP OFF SOUND TRAP ON	Remove X506	1	X506.2-3	1	P361		L551, L552, L553 → adjust to flat frequency response between 33 and 40 MHz C654 → trap at 33.13 MHz (approx. -10 dB) Insert X506:1-2

EMF ... ADJUSTMENT INSTRUCTIONS, IF SECTION / VIDEO AMPLIFIER

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
<i>Nyquist filter</i>	ENVEL SOUND TRAP ON	C618, C616, C622, C623, C634, C631, C636 (IF sect.) → 1/2 Remove X501	1	X505.2-3	1	P361		C623 → 40.2 MHz C631 → 42.75 MHz C616 → approx. 60 MHz Adjust Nyquist slope using C618, C622, C634, C636, 37.4 MHz → 0 dB 38.4 MHz → -2 dB 38.9 MHz → -6 dB 39.4 MHz → -14 dB L171 → adjust trap to 33.3 MHz Insert X505: 1-2
<i>All-pass filter</i>	ENVEL SOUND TRAP ON	R559, R563, R562, R564, R577, R591, R594, R593, R595; C583, C581, C604, C602 → 1/2 Remove X504	1	X504.2-3	1	P515		L532 → 35 MHz C604, R594 → adjust to flat frequency response
	SOUND TRAP OFF							C597 → approx. 34.5 MHz C602, R591 → adjust to flat frequency response Insert X504: 1-2
	SOUND TRAP ON	Remove X502		X502.2-3				L522 → 39 MHz C583, R563 → adjust to flat frequency response
	SOUND TRAP OFF							C574 → approx. 37 MHz C583, R559 → adjust to flat frequency response Insert X502: 1-2

EMF ... ADJUSTMENT INSTRUCTIONS, IF SECTION / VIDEO AMPLIFIER

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
Highpass (sound trap)	ENVEL. SOUND TRAP ON	C531, C547, C537, C544, C599 → 1/2 Remove X501: 1-2 and X503	1	X501.2-3	1	P513		C542 → 33.4 MHz C557 → 31.9 MHz L512 → approx. 22 MHz C531, C547, L512 → frequency response in bassband up to 40 MHz C544 → approx. 31.4 MHz C559 → approx. 29.5 MHz C537 → approx. 20 MHz Adjust to flat frequency response between 33.5 and 40 MHz Insert X501:1-2.
	SOUND TRAP OFF							
IF control stage (sound trap)	ENVEL. MAN SOUND TRAP ON	R143,R511(IF sect.) R102 (front panel) → 1/2	1	IF input X5.3	1-TK	P103		Check frequency response then: C508 → trap 33.36 MHz R507 → to max. trap depth C516 → trap 40.4 MHz C512 → approx. 32 MHz
	SOUND TRAP OFF					P513		Check frequency response of sound trap, subsequently insert X503
IF output stage	ENVEL. MAN SOUND TRAP ON		1	IF input X5.3	1	X5.4		33 to 40 MHz ref. 38.9 MHz ± 0.5 dB

EMF ... ADJUSTMENT INSTRUCTIONS, IF SECTION / VIDEO AMPLIFIER

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
Intercarrier processing	ENVEL MAN SOUND TRAP ON	R102 (front panel) R183, R186, R203, R206 → 1/2	1	IF input X5.3	1	P105 P107		L111, L112 → bandpass 38.9 MHz ± 200 kHz R186, C138 → bandpass 33.4 MHz R183 → level 33.4 MHz; + 1 dB at 38.9 MHz R206, C161 → bandpass 33.15 MHz R203 → level 33.15 MHz; + 8 dB at 38.9 MHz
IF total passband characteristic	ENVEL SOUND TRAP ON MAN		1	IF input X5.3 100mV	1	P361		Correct IF passband characteristic IF level at different stages with 38.8-MHz CW signal, adjust V _{VIDEO} display using R186.
Pulse processing	ENVEL SOUND TRAP ON	X131:2-3 (motherboard)	3, 4	IF input X5.3	19 6	P123 (mother-board) P115 P116 P119 P121	15625 Hz	R213 → H oscillator to line frequency X131:1-2; H oscillator should lock <u>Testing of pulse</u> H sampling pulse Sync sampling pulse 15-kHz detection: with sync → H; without sync → L S: neg. sync pulse

EMF ... ADJUSTMENT INSTRUCTIONS, IF SECTION / VIDEO AMPLIFIER

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
Synchronous detector	ENVEL MAN SOUND TRAP OFF	X133: 2-3 R237, R277, R282, R337, R348, R267 (mother-board) → 1/2 S101 position 1 (sampled)	3, 4	IF input X5.3	6	X137.1 P171	300 mV _{pp} min.	<u>Sound trap</u> Adjust using R102 (front panel) Switch off IF vision, modulate TT1 and TT2 with ± 30-kHz deviation, adjust to minimum amplitude using L171 - switch on IF vision
	SYNCHR SOUND TRAP ON		3, 4			P181	0 Hz	<u>Oscillator (cover over oscillator chamber)</u> Modulate SBUF with sawtooth, adjust sawtooth frequency to minimum beat using L201; insert X133: 1-2
Sync demodulator	ZERO REF ON SYNCHR MAN SOUND TRAP ON	S101 pos.1 (sampled) S101 pos. 2 (unsampled)	3	Video signal No 9, IF input X5.3	6	Q output X7		<u>Q signal phase</u> Adjust to steady display using R281 <u>I-Q display (see Fig. 25)</u> (X: I signal 200 mV/cm; Y: Q signal 20 mV/cm) Adjust black level and zero reference to same Y magnitude using R348

EMF ... ADJUSTMENT INSTRUCTIONS, IF SECTION / VIDEO AMPLIFIER

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
Sync demodulator			3, 4	IF input X5.3 100mV		Video output X6	max.	<u>I signal phase</u> Adjust to maximum using R337
						X6 X7	1 V _{pp} 1 V _{pp}	<u>Q signal level</u> Adjust I signal using R102 (front panel) Adjust amplitude of Q signal using R267 (motherboard) X123:1-2
		S101 pos.1 (sampled)				X7		<u>Loop characteristic</u> Adjust to steady display (minimum flickering) using R281
		S101 pos.2 (unsampled)						<u>I-Q display (see Fig. 25)</u> Adjust sync pulse approx. 10 mV below black level using R277, adjust black level and zero reference to same amplitude using R348
		S101 pos.2 (unsampled)				X7		<u>Frequency / phase comparator</u> Adjust R237 such that a Q signal appears without oscillations even with a large attenuation (IF signal $V_{IN} \leq 10$ mV) after switching the instrument off/on

EMF ... ADJUSTMENT INSTRUCTIONS, IF SECTION / VIDEO AMPLIFIER

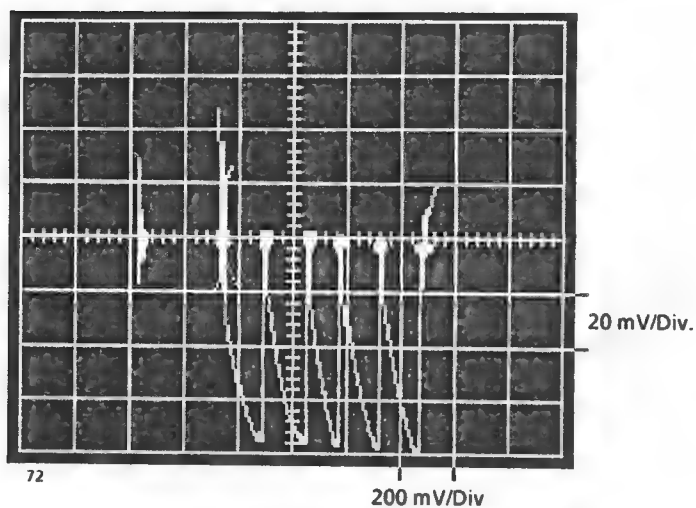
Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
Final adjustment	SYNCHR SOUND TRAP ON		3, 4	IF input X5.3 100mV	6	Video output X6	100 mV	<u>Video level, DC level</u> Adjust CW IF level signal (38.9 MHz) at L110 using R102 (front panel)
							1 V _{pp}	Modulate SBUF with video, adjust video level using R445.
							0V	Adjust DC level of zero reference pulse using R423.
	ENVEL SOUND TRAP ON					-0.1V	Adjust DC level of envelope curve white using R403	
						1 V _{pp}	Adjust level of video signal envelope curve using R412.	
	SYNCHR MAN					V _{VIDEO} display	0	Adjust using R174 (motherboard) without IF input signal
						V _{VIDEO} display	V _{VIDEO}	Adjust using R186 (motherboard) with IF input signal
	SYNCHR AUTO					Video output X6, V _{VIDEO} display	1V _{pp}	Adjust R177 such that V _{VIDEO} display corresponds to video signal of 1 V _{pp}

EMF ... ADJUSTMENT INSTRUCTIONS, IF SECTION / VIDEO AMPLIFIER

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
Final adjustment	SYNCHR; SOUND TRAP, ZERO REF ON						Lines 15 and 328	<u>Zero reference pulse level</u> Adjust zero reference pulse level using R243 (motherboard)
	ENVEL MAN		7	IF input X5.3 100mV	7	P361		<u>Adjustment of IF passband characteristic</u> Attach both covers, sound trap → 33.36 MHz. Coarse adjustment of video frequency response + group delay time. Level approx. 1 dB tolerance, group delay 20 ns
			3	TT 1/2 ± 30kHz deviation, mod.	12	X6		<u>Sound trap</u> Carry out very fine adjustment of video signal and sync pulses for best S/N ratio using C542, C508, C654

EMF ... ADJUSTMENT INSTRUCTIONS, IF SECTION / VIDEO AMPLIFIER

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
Final adjustment	SYNCHR SOUND TRAP ON/OFF		MA3	IF input X5.3	MA3	Video output X6	Data sheet	<u>IF and VF amplitude characteristic</u>
	ENVEL SOUND TRAP OFF							<u>IF and VF group delay</u> Adjust all-pass filter Alternately adjust IF and VF frequency response in synchronous detection
	SYNCHR SOUND TRAP ON AUTO		MA2	IF input X5.3	MA2	X8 sound 1 X9 sound 2		<u>Intercarrier S/N ratio</u> Check



Synchronous - sampled

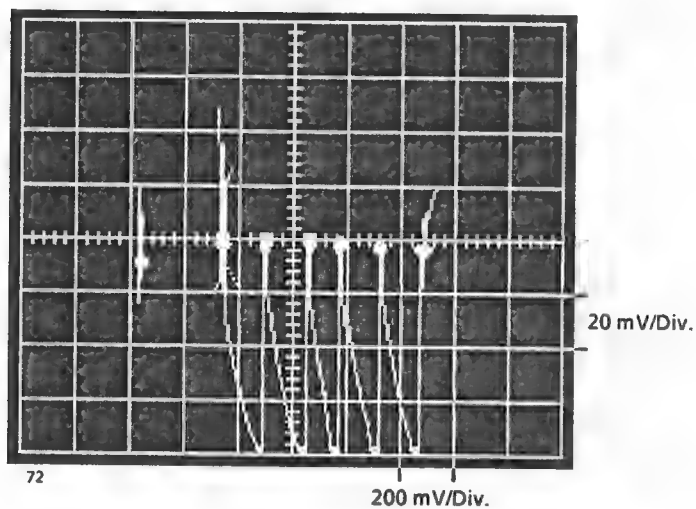
X input → video signal 1 V_{pp}
(staircase)

Y input → Q signal

X-Y display

Zero reference "On"

Fig. 24



Synchronous - non-sampled

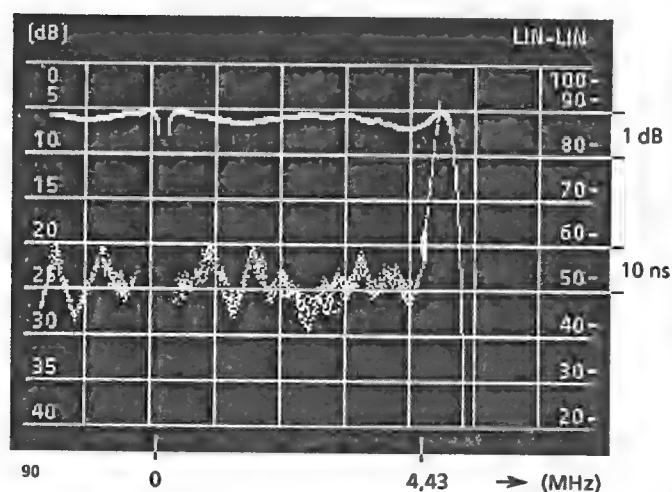
X input → video signal 1 V_{pp}
(staircase)

Y input → Q signal

X-Y display

Zero reference "On"

Fig. 25



Synchronous

IF, VF amplitude
"Sound trap on"

IF, VF group delay
"Sound trap on"

IF input → Q signal

Fig. 26

EMF ADJUSTMENT INSTRUCTIONS, RF SECTION

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
1st oscillator	Channel 2 [air]	X263: 2-3, remove D261 from socket			21	Z310 (0311)		<u>Control voltage</u> Control voltage must be within range 1 to 28 V for all oscillators
		X25:1-2 (synth.) X25:1-2 X25:1-2 X25:2-3						Oscillator 1 (front panel: channel [air] 2-12) Oscill. 2 (front panel: special [CATV std.] 11-41) Oscillator 3 (front panel: channel [air] 21-39) Oscillator 4 (front panel: channel [air] 40-83)
		X25(synth.): 1-2			22	X265	1047 MHz	<u>Oscillator frequency</u> Adjust frequency using C345
					21	X265	≥ 10 dBm	<u>Oscillator level</u> Level for all channels
2nd oscillator		X296: 2-3, remove D295 from socket			22	X293	959.85 MHz	<u>Oscillator frequency</u> Adjust frequency using C422
		X484: 2-3						
		X484: 1-2; X444: 1-2						<u>Frequency range of 1st reference oscillator</u> Repeat both settings several times
		X631: 2-3						Adjust using C454
		X631: 2-4						Adjust using C458
		X632: open				X293	959.85 MHz	<u>Nominal frequency</u> Adjust frequency using R653

EMFT ADJUSTMENT INSTRUCTIONS, RF SECTION

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
2nd oscillator		X444: 2-3			22	X293	959.913 MHz	<u>Upper frequency limit of search run</u> Adjust frequency using R447 Rotate R641 up to switchover point (measured at P640, -10 V ↔ 10 V)
					21	X293	≥ 7 dBm	<u>Oscillator level</u> Check level
					22	P620	38.9 MHz	<u>Frequency of 2nd reference oscillator</u> Adjust frequency of C601
Preselection	RF 50Ω, MAN, 0 dB Channel 40 [air] Channel 21 [air]	X240: 2-3, X187: 1-2, X261: 1-3, X25 (synth): 1-2	1	X123, level 0.5 V - 25dB (= 0 dB)	1-BR	X262	620 MHz (-0.2 dB)	<u>Highpass ≥ 620 MHz</u> Adjust cutoff frequency by lowering or raising L183 and L185 (soldered); change L183 and L185 by the same amount; see Fig. 1 for passband curve <u>Bandpass filter 470 - 627 MHz</u> Change coupling of L255 to L253 and C256 to L257 by soldering. Initially set both tapplings equally far from the ground of L253 and L257; increase the coupling until 3 humps are visible (tighter coupling: tapping points further away from ground of L253 or L257). Continued on next page

EMF ADJUSTMENT INSTRUCTIONS, RF SECTION

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
Preselection	Channel 21 [air]							<p><u>Bandpass 470 - 627 MHz (continued)</u> Shift the centre hump into the middle of the passband curve by raising or lowering L255; shift the frequency of the passband curve upwards or downwards by raising or lowering L253 and L257 (by same magnitude).</p> <p>Make coupling unsymmetrical by increasing the centre frequencies, i.e. one tapping further away from ground; reduce the ripple to a minimum of 0.5 dB by reducing the coupling</p>
							-0.2 dB	Adjust the passband curve 470 - 630 MHz as in Fig. 2.
	Channel 30 [CATV std.]						-0.2 dB	<p><u>Bandpass 372 - 477 MHz</u> Similarly to bandpass 470 - 627 MHz, adjust the passband curve 370 - 480 MHz as in Fig. 3 by changing L193, L197, L195 and the two coupling values</p>
	Channel 21 [CATV std.]						-0.2 dB	<p><u>Bandpass 300 - 379 MHz</u> Similarly to 470 - 627 MHz, adjust the passband curve 300 - 380 MHz as in Fig. 4 by changing L203, L207, L205 and the two coupling values</p>
	Channel 11 [CATV std.]						-0.2 dB	<p><u>Bandpass 228 - 307 MHz</u> Similarly to bandpass 470 - 627 MHz, adjust the passband curve 230 - 310 MHz as in Fig. 5 by changing L213, L217, L215 and the two coupling values</p>

EMFT ADJUSTMENT INSTRUCTIONS, RF SECTION

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
Preselection	Channel 5 [air]						-0.2 dB	<u>Bandpass 174 - 185 MHz</u> Similarly to bandpass 470 - 627 MHz, adjust the passband curve 174 - 185 MHz as in Fig. 6 by changing L223, L227, L225 and the two coupling values
	Channel 1 [CATV std.]						-0.2 dB	<u>Bandpass 102 - 181 MHz</u> Similarly to bandpass 470 - 627 MHz, adjust the transmission curve 102 - 181 MHz as in Fig. 7 by changing L233, L237, L235 but not the two coupling values
	Channel 2 [air]						-0.2 dB	<u>Lowpass ≤ 109 MHz</u> Adjust the passband curve ≤ 110 MHz as in Fig. 8 using L245 and L247 (screwed in by same amount)
	Channel 2 [air]	X240: 1-2						<u>VHF trap</u> Set trap to 100 MHz using L242, see Fig. 9
	Channel 1 [CATV std.]	X240: 2-3						Set trap to 100 MHz using L242, see Fig. 10
	0 dB 10 dB 20 dB						10 \pm 1dB 0 \pm 1dB -10 \pm 1dB	<u>Passband attenuation</u> Output level for all filters (1 - 7) " "

EMF7 ADJUSTMENT INSTRUCTIONS, RF SECTION

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
Preselection	RF 75 Ω			X124			≥ 12 dB (<300MHz) ≥ 10 dB (>300MHz) ≥ 8 dB	<u>Return loss</u> For all positions of S19 and all filters (1 - 7) <u>75-Ω input</u> Check output level
1-GHz bandpass		X264: 2-4; X294: 1-3	1	X266, 0.5V - 25 dB (= 0 dB)	1-DK	X295	approx. 995 MHz approx. 0.2 dB	<u>Coarse setting</u> Bend C272, C273, C276 and C277 towards C271, C274 and C279 until they are approx. 2 mm away (coupling); unscrew C271, C274 and C279 and adjust the resonance frequencies to approx. 995 MHz <u>Coarse adjustment</u> <u>(see also bandpass 470 - 627 MHz)</u> Increase the coupling if three humps are not visible; adjust ripple using C272, C273, C276 and C277, maintain the passband curve at maximum using C271, C274 and C279. Make coupling unsymmetrical by increasing the centre frequencies, i.e. e.g. C272 and C273 smaller than C276 and C277 (or vice versa)

EMFT ADJUSTMENT INSTRUCTIONS, RF SECTION

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
1-GHz bandpass							-0.2 dB 992 - 1000 MHz	If the bandwidth is larger than 8 MHz, bend L270 and L280 further away from L271 and L279 (or vice versa); see above for correction of passband shape Set the passband curve to frequency range 992 - 1000 MHz using C271, C274 and C279. See Fig. 11 for passband curve
1-GHz bandpass	Channel 18 (CATV) RF 50 Ω MAN 0 dB -10 dB OFF;	X187, X261, X263: 1-2; D261 inserted; X264, X271, X279, X294, X296: 1-2; D295 inserted, X297, X299: 1-2; X25 (synth.): 1-2	1	X123, 0.5 V - 25 dB	1-DK	X380		<u>Fine adjustment</u> Repeat coarse adjustment, frequency range (as result of mixing) 279 - 287 MHz; the passband attenuation should remain approximately the same. Screw the additional cover onto the bandpass and correct the offset using C271, C274 and C279; set slight tilt. See Fig. 11 for passband curve
IF bandpass and SAW filter (SAW only standard B/G)	-10 dB OFF; SAW OFF;	X297: 2-4; X299: 2-3 X25 (synth.): 1-2 <u>Only standard B/G:</u> X512, X514, X520: 1-2 R398 \rightarrow 1/2	1	X298, 0.5 V - 25 dB	1-DK	X113	-0.2 dB	<u>Adjustment of IF bandpass:</u> Adjust passband curve to frequency range 32 - 40 MHz using L401 and L402; adjust bandwidth using C403. See Fig. 12 for passband curve

EMF ADJUSTMENT INSTRUCTIONS, RF SECTION

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specific.	Adjustment
IF bandpass and SAW filter (SAW only standard B/G)	-10 dB ON SAW ON							<p><u>Checking the 10-dB attenuation</u> Passband curve 10 dB less</p> <p><u>SAW filter</u> Obtain passband curve in line with position "SAW OFF" in the frequency range 35 - 39 MHz using R526, 528. See Fig. 13 for passband curve.</p>
Overall function	Channel 18 (CATV) RF 50 Ω MAN, 0 dB, -10 dB OFF	Jumpers in standard position; X25 (synth.): 1-2; additional cover for 1-GHz bandpass screwed on X25 (synth.): 2-3	1	X123	1-DK 21	 X113	 3 mV 100 mV	<p><u>Total gain</u> Set sweep tester in manual mode to passband (approx. 285 MHz)</p> <p>Set sweep tester output</p> <p>Adjust level using R398</p> <p><u>Readjustment of 1-GHz bandpass</u> Screw on complete cover. Adjust frequency response until it is flat using C271 or C279 (by not more than 1/16 turn). See Fig. 14 for passband curve</p>

EMFT ADJUSTMENT INSTRUCTIONS, RF SECTION

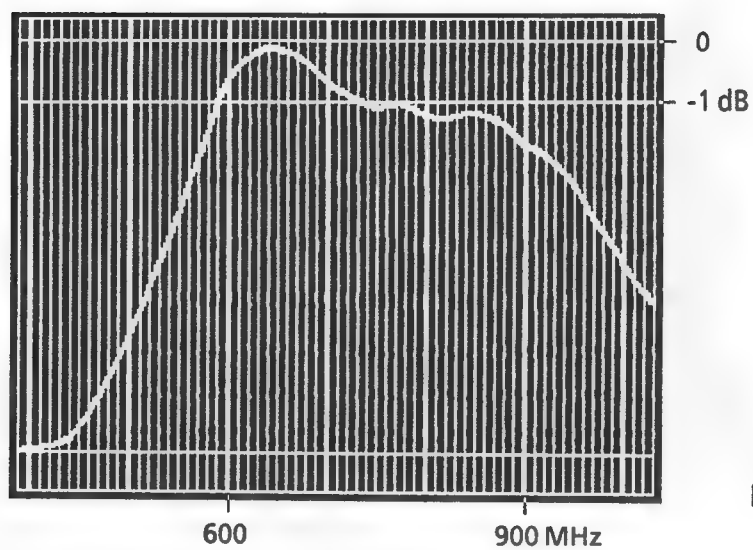


Fig. 1

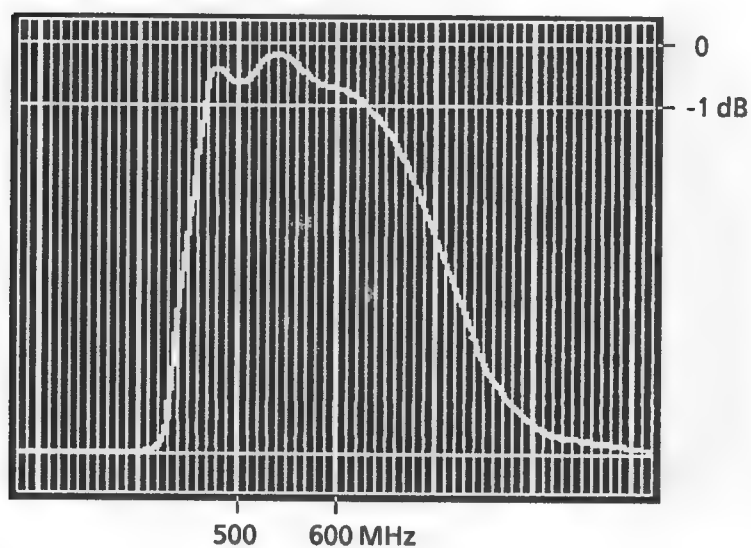


Fig. 2

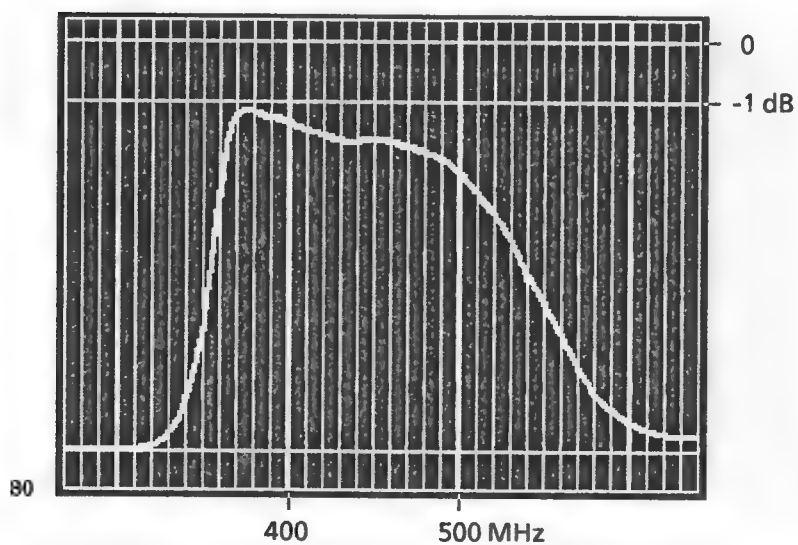


Fig. 3

EMFT ADJUSTMENT INSTRUCTIONS, RF SECTION

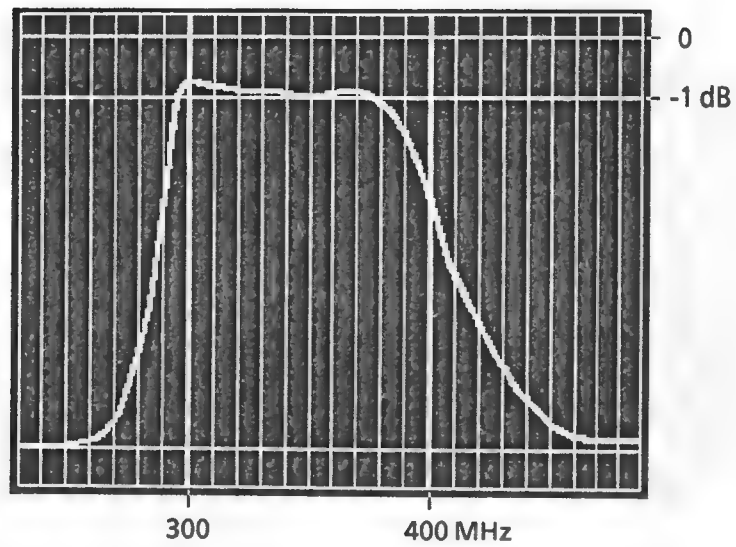


Fig. 4

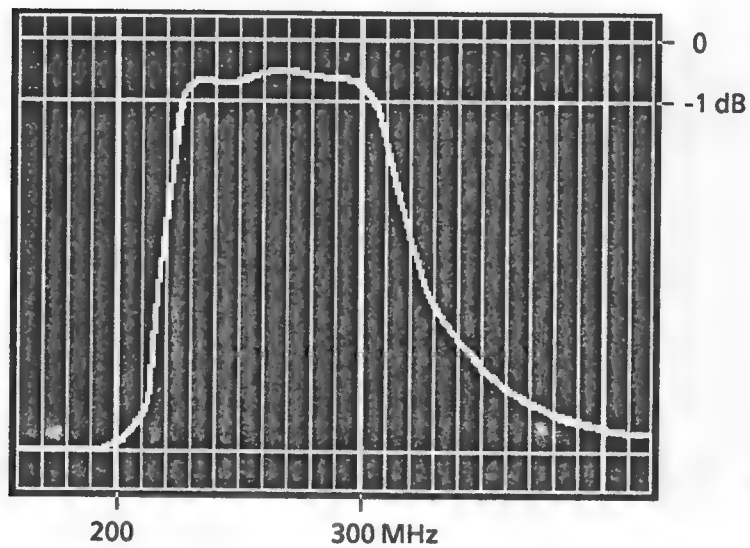


Fig. 5

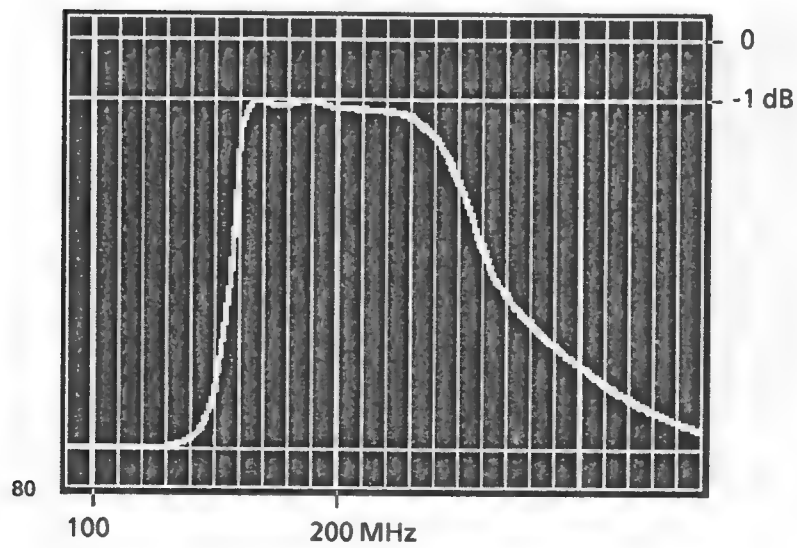


Fig. 6

EMFT ADJUSTMENT INSTRUCTIONS, RF SECTION

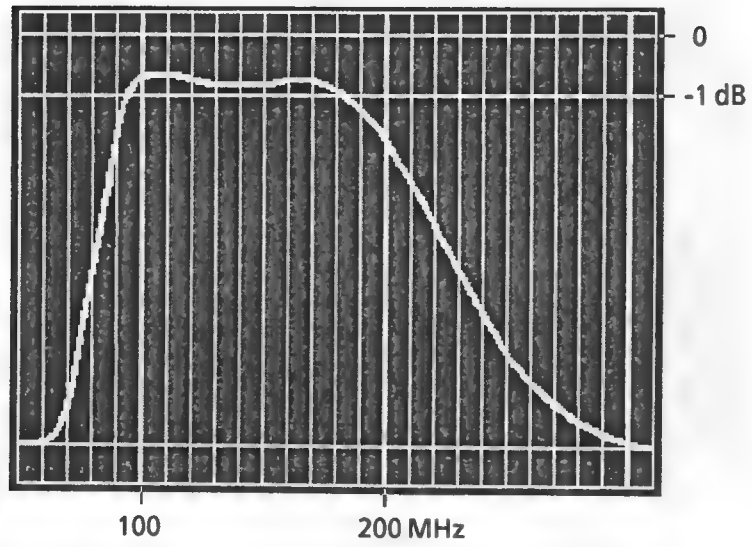


Fig. 7

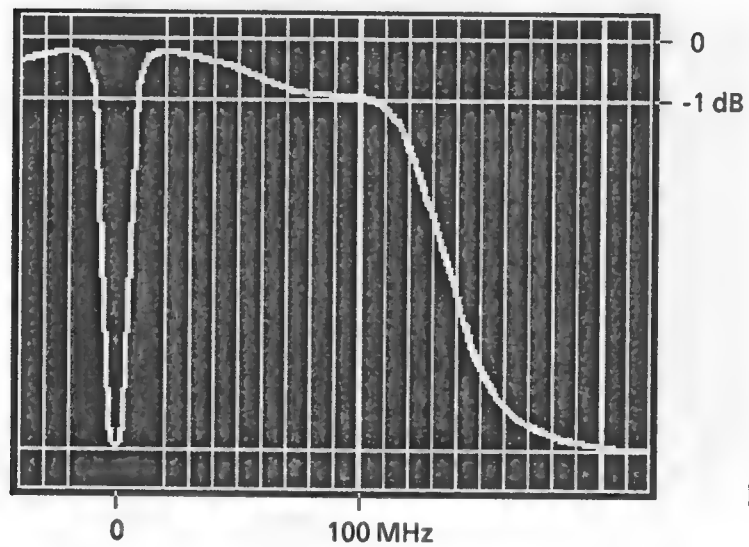


Fig. 8

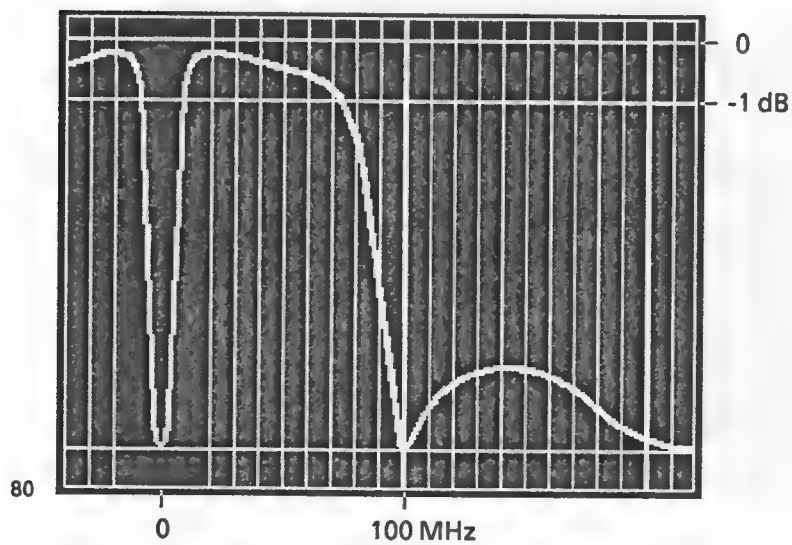


Fig. 9

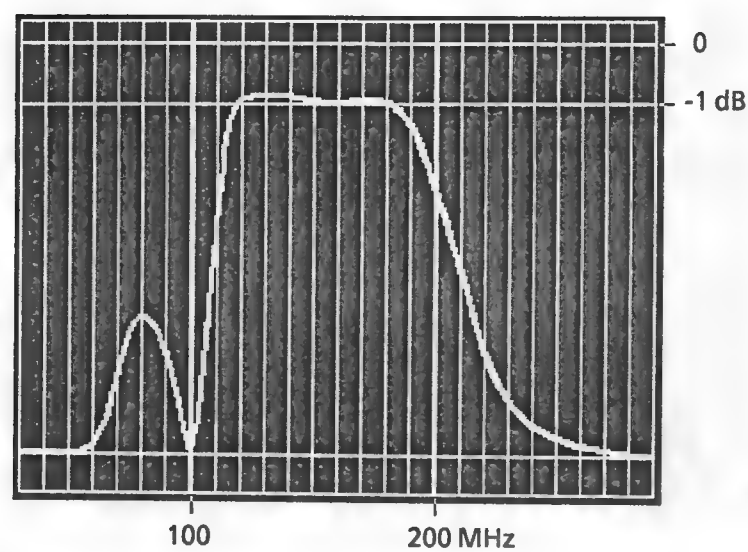


Fig. 10

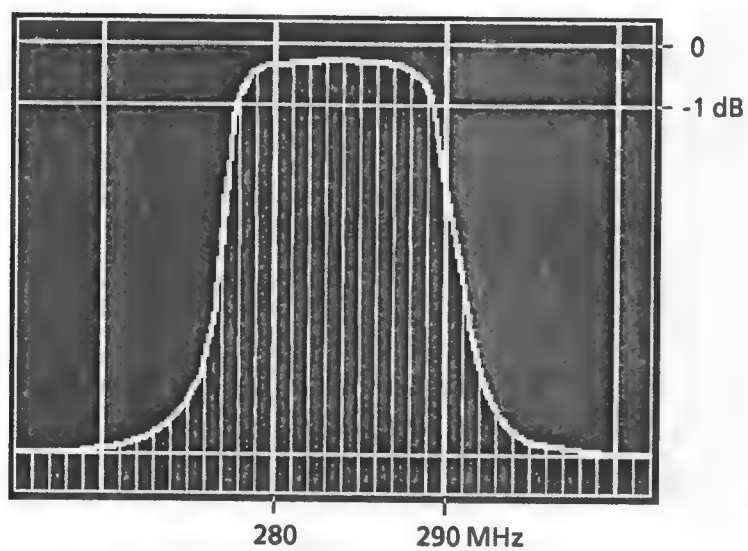


Fig. 11

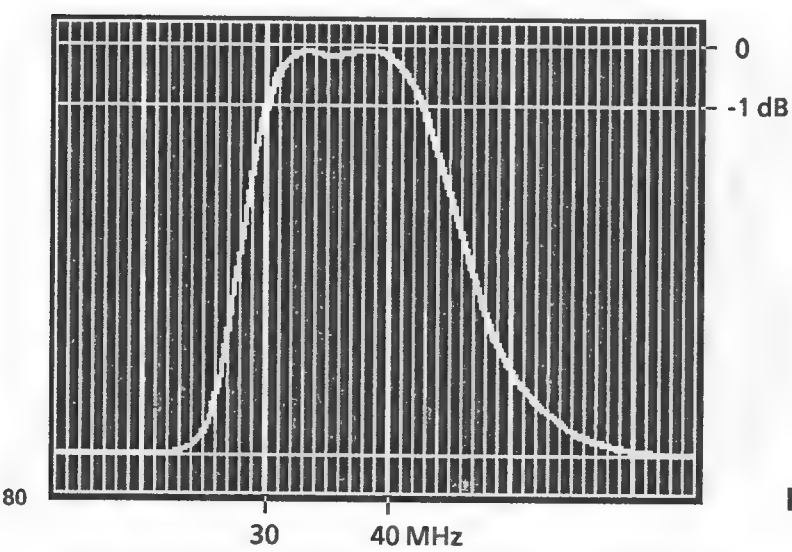


Fig. 12

EMFT ADJUSTMENT INSTRUCTIONS, RF SECTION

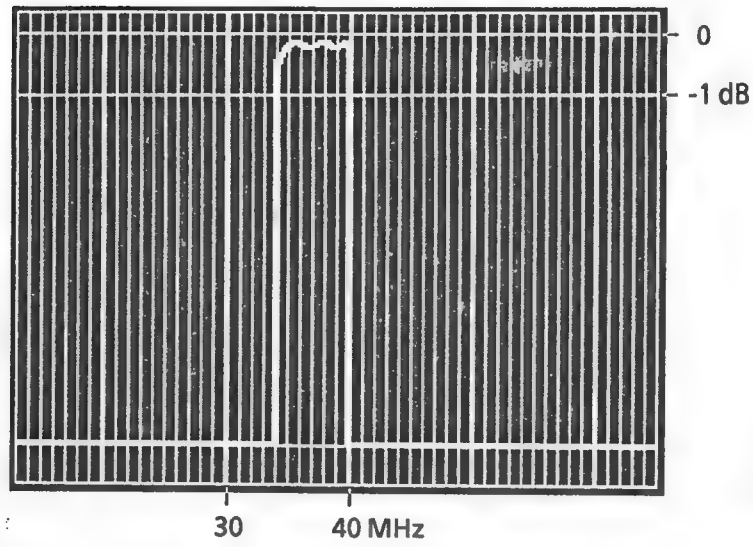


Fig. 13

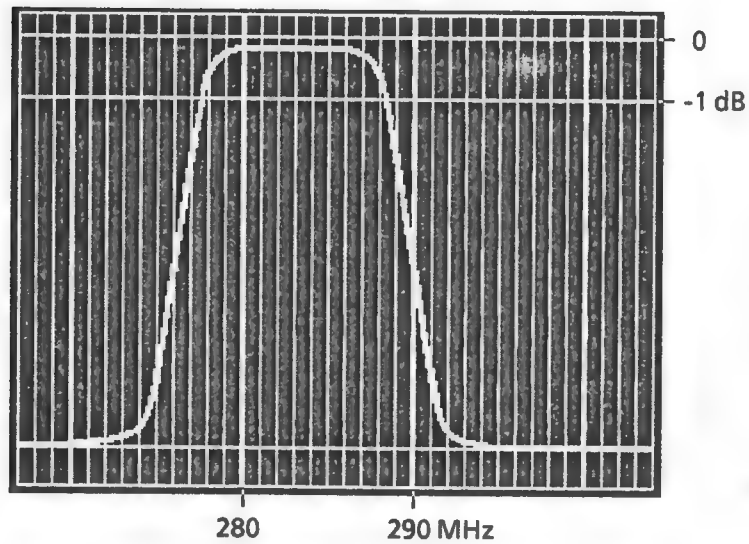


Fig. 14

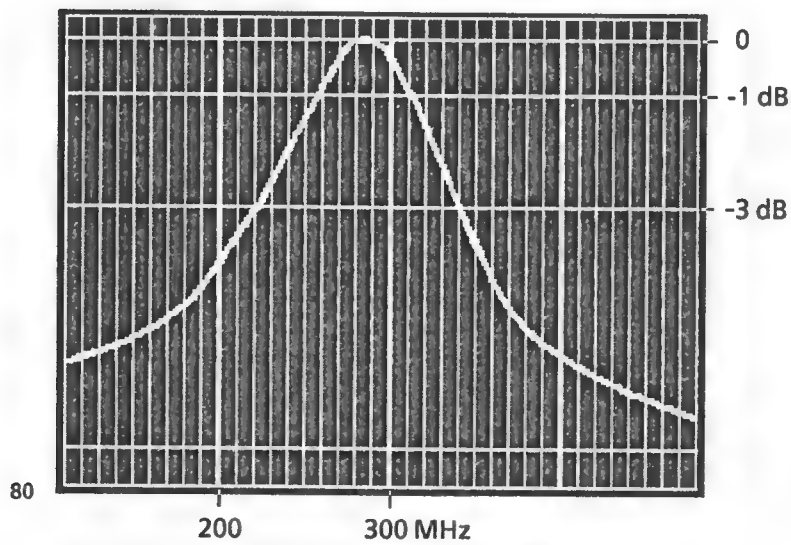


Fig. 15

EMF SYNTHESIZER, ADJUSTMENT INSTRUCTIONS

Test	EMF mode	Default setting	Meas. instr.	Signal input	Meas. instr.	Test point	Specification	Adjustment
Search threshold		S18 → "RF 50Ω" S19 → "0 dB" S21 → "MAN" S22 → "-10dB OFF"	3,4	RF 50Ω-input				<u>Requirement:</u> Complete unit adjusted
		TV channel at approx. 280 MHz		SPF2 signal No.9			approx. 45dBμV	Set search threshold using trimmer on synthesizer board
				Vin 40dBμV Vin 50dBμV				<u>Test:</u> Start search → should not lock in Start search → should lock in on TV channel





ROHDE & SCHWARZ

Unternehmensbereich
Rundfunk- und Fernsehtechnik

**Schaltungsunterlagen
Schematic diagrams - Schémas**

**TV - MESSEMPFÄNGER
TV TEST RECEIVER
RECEPTEUR DE MESURE TV**

EMFT

821.4019

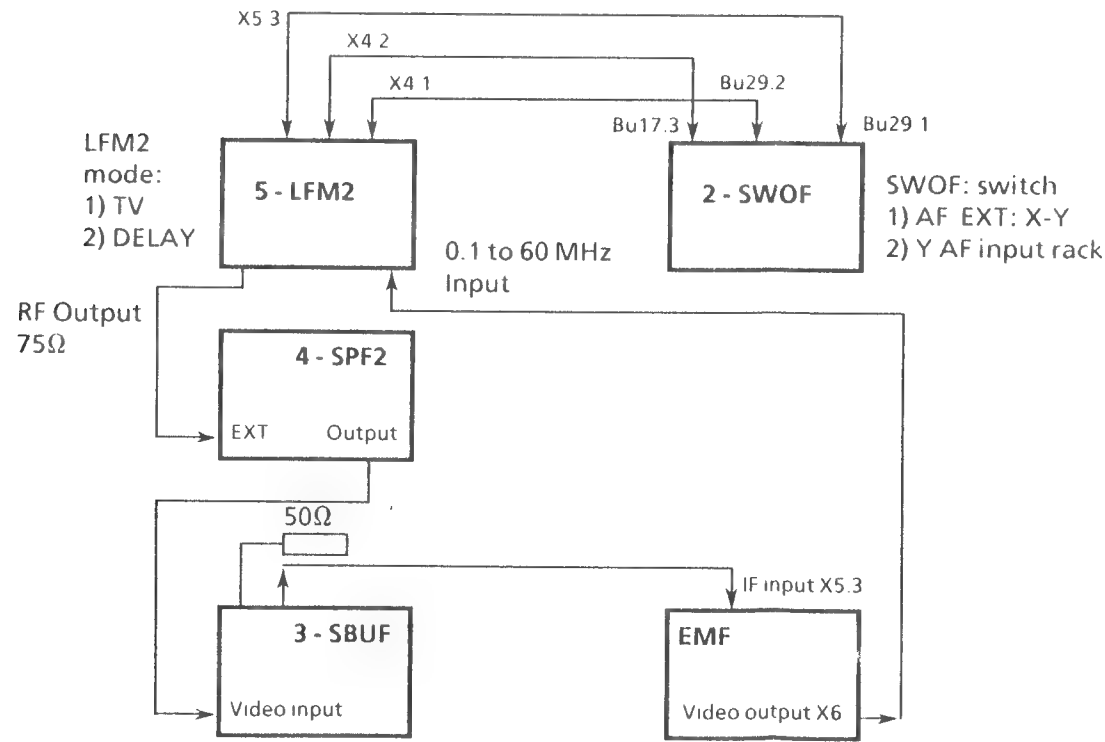
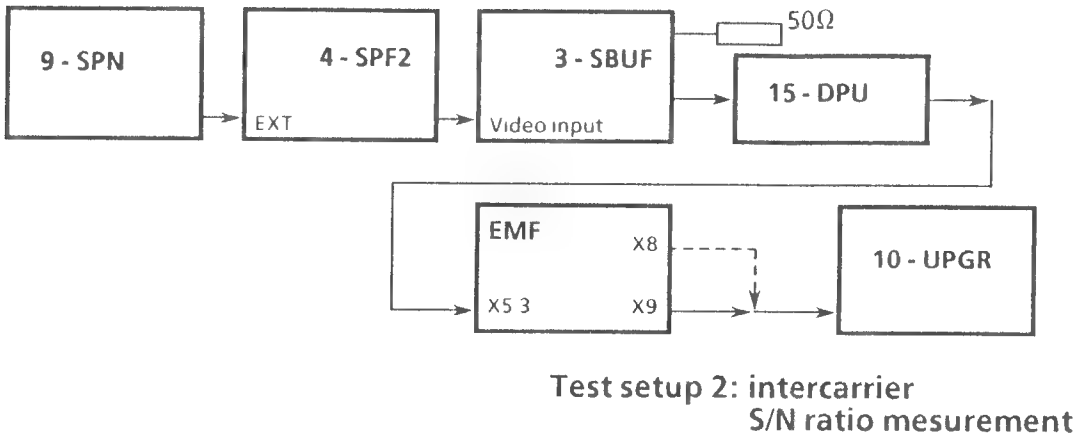
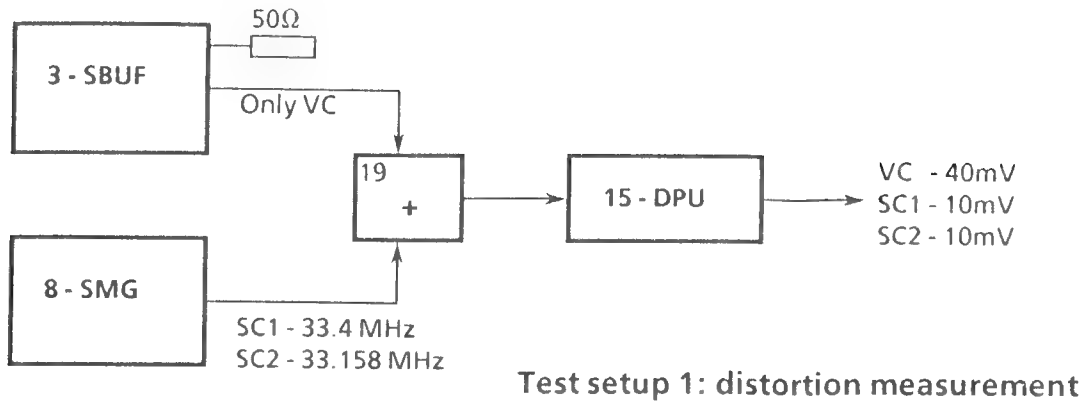
Inhaltsübersicht

Table of Contents

Table des matières

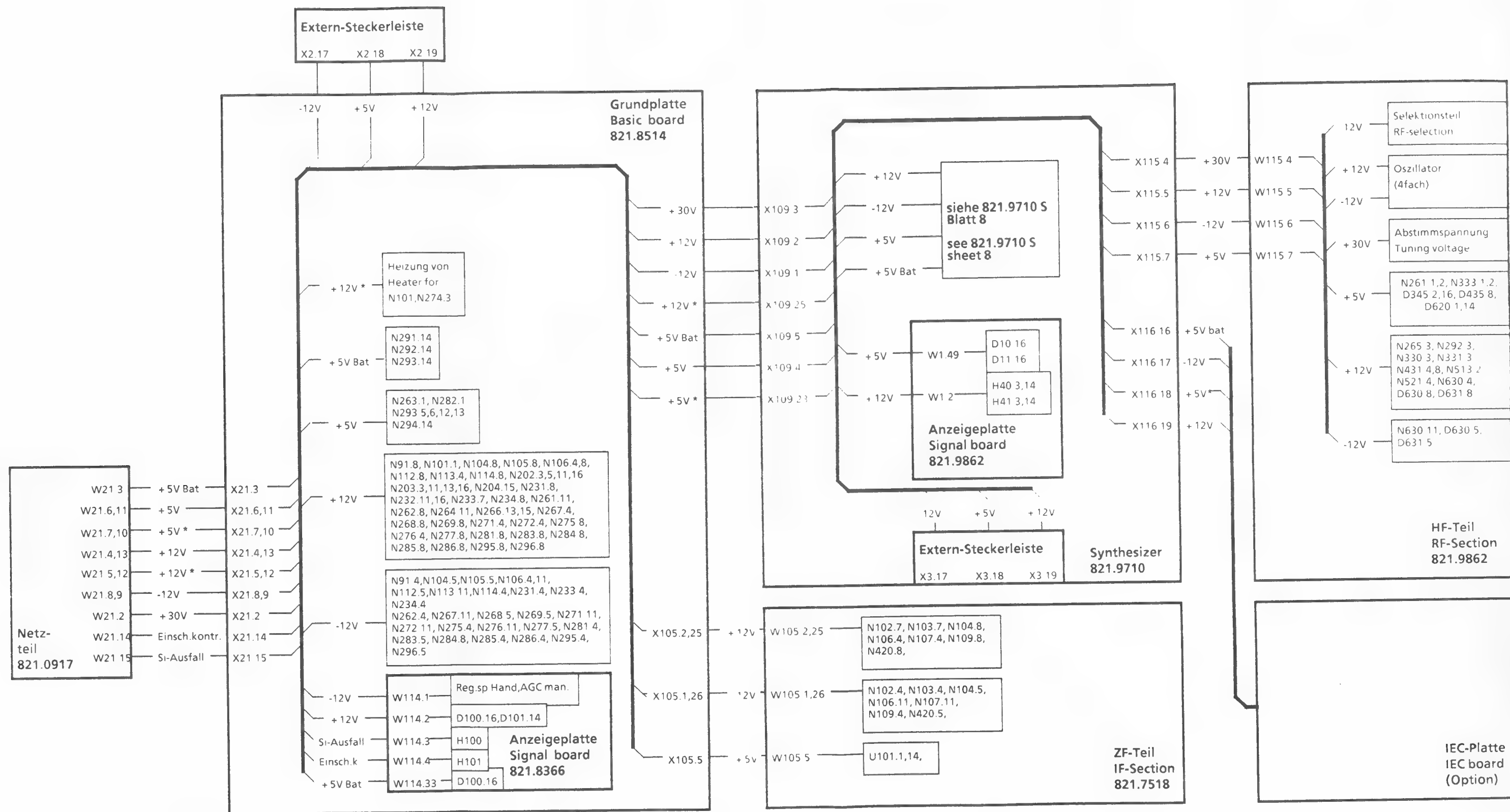
Blockschaltpläne Block Diagrams Synoptiques	Identnummer Stock-Nr. N° de référence	Blatt Sheet Feuille
Stromversorgung Power Supply Alimentation	821.4019	10.1
Anzeigeplatte Display Board Carte d'affichage	821.4019 S	1
Netzteil / Power Section Alimentation		
ZF-Teil / IF Section Partie FI		
Grundplatte / Motherboard Carte de base	821.4019 S	2
HF-Teil / RF Section Partie RF	821.4019 S	3
Synthesizer / Synthétiseur	821.4019 S	4
Schalteilliste Grundgerät Parts List Complete Unit Liste des pièces détachées pour l'appareil de base	821.4019 SA	1
Stückliste / Pieces List Liste – inventaire	821.4019 ST	1

Test setups



Measuring instruments used

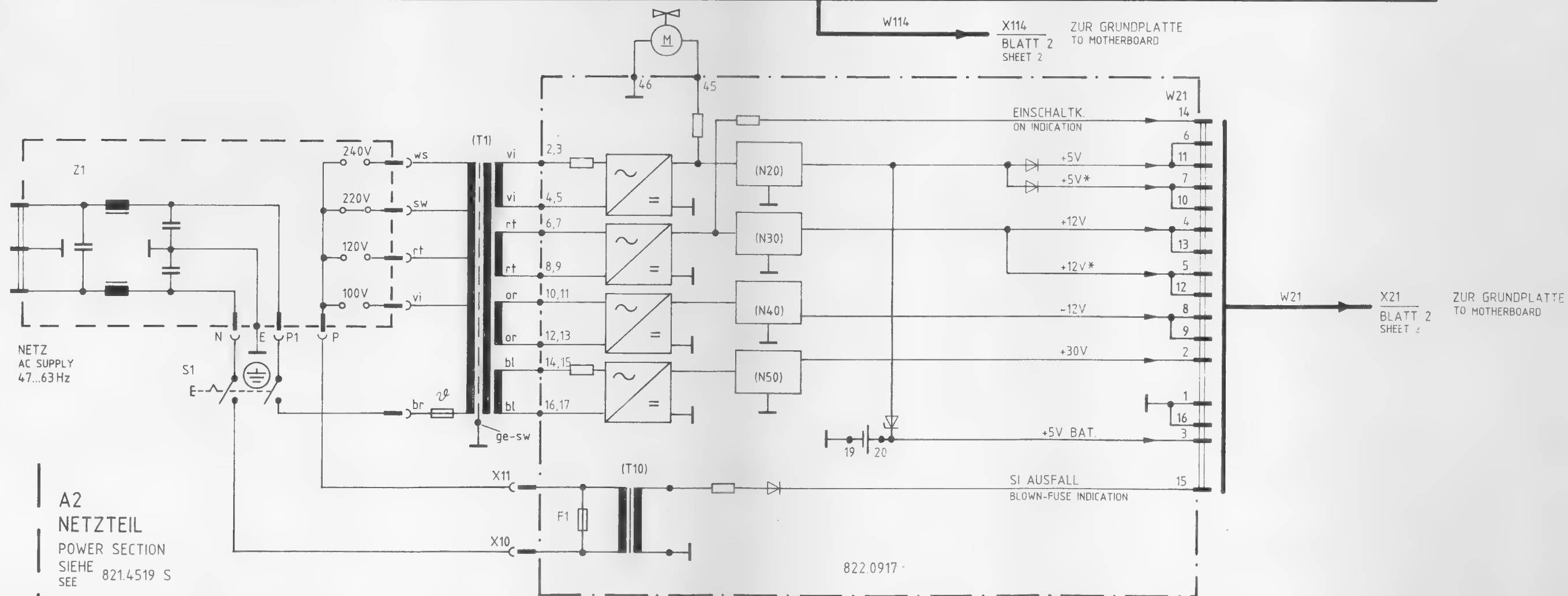
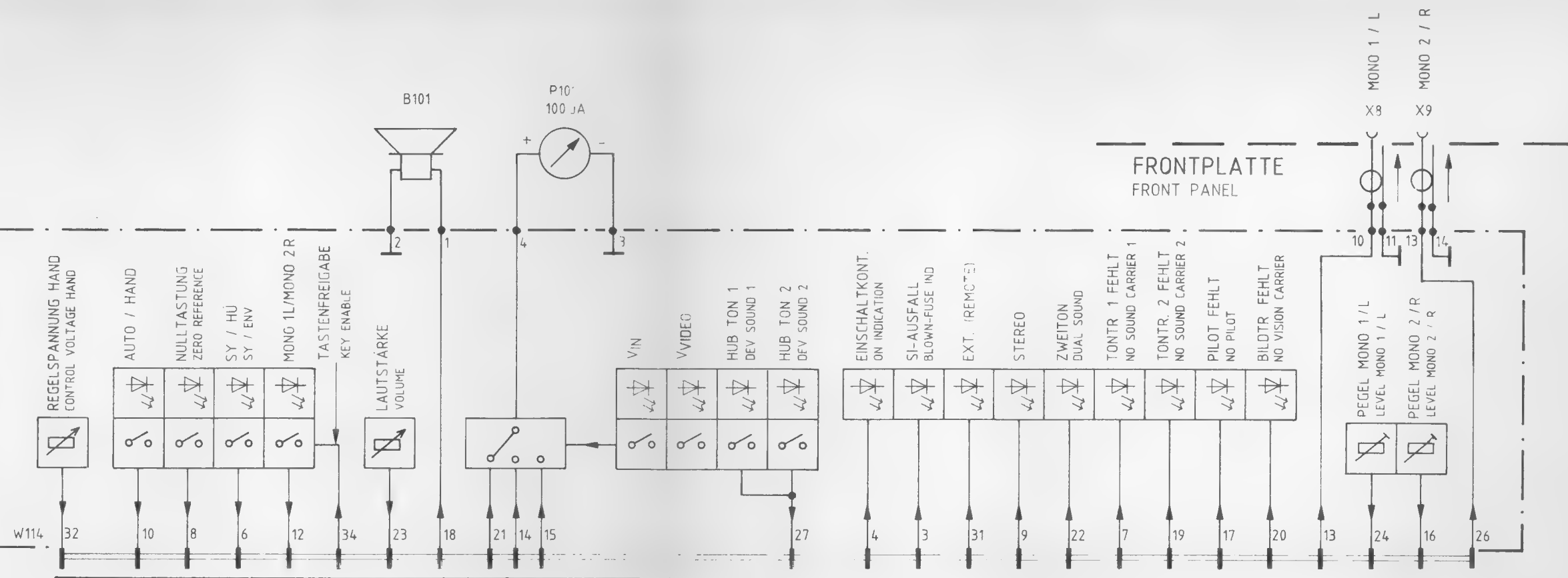
1	-	Polyskop	SWOB IV or V Insertion unit 50 Ω (DK) Probe (TK) SWR bridge 50 Ω (BR)
2	-	Videoskop	SWOF SWR bridge 75 Ω (BR)
3	-	TV Vision/Sound Modulator	SBUF, vision carrier = 38.9 MHz SBUF, sound carrier 1 = 33.4 MHz SBUF, sound carrier 2 = 33.158 MHz With stereo coder
4	-	Video Test Signal Generator	SPF2
5	-	Group Delay Measuring Set	LFM2
6	-	Oscilloscope	KF with dual-beam probe 10:10 to 100 MHz
7	-	Transposer	MUF 2
8	-	Signal Generator	SMK or SMG
9	-	AF Generator	SPN
10	-	AF Psophometer	UPGR
11	-	Distortion Meter	LEA
12	-	Video Noise Meter	UPSF2
13	-	Differential Phase/Gain Meter	PVF
14	-	VHF DC Millivoltmeter	URV Insertion unit 50 Ω (DK) Probe (TK)
15	-	UHF Attenuator Set 50 Ω	DPU
16	-	Analyzer	
17	-	TV Dual-sound Demodulator	FATF
18	-	Probe thermometer	
19	-	Vision carrier/sound carrier adder	



Si-Ausfall / Fuse blown Einsch.kontr. / Power ON LED

Stromversorgung Übersichtsplan EMFT
Power Supply Block Diagram EMFT
821.4019 -10.1-

A1
ANZEIGEPLATTE
DISPLAY BOARD
SIEHE 8218366 S



A2
NETZTEIL
POWER SECTION
SIEHE 8214519 S

A3
ZF-
VIDE
IF SE
VIDEO
SIEHE
SEE

ZF-SIGNAL
IF SIGNALCONTROL
VOLTAGE
REGEL-
SPG.TON 1
SOUND 1

38,9 MHz

TON 2
SOUND 2ZF TON 1
IF SOUND 1ZF TON 2
IF SOUND 2CONTROL
VOLTAGE
REGEL-
SPG.
38,9 MHz
GTONFALLE
SOUND TRAPTONFALLE
ALLPASS
SOUND TRAP
 $\frac{d\varphi}{d\omega}$

NYQUISTFILTER

ZF BANDPASS
IF BAND PASSTONFALLE
SOUND TRAP

PHASE Q-SIGNAL

TONFALLE EIN / AUS
SOUND TRAP ON / OFF

Q-DEMOD.

I-DEMOD.

ZERO REFERENCE
NULLTASTUNG

REGELSPANNUNG · CONTROL VOLTAGE

Q-SIGNAL

FREQUENZABLAGGE · FREQUENCY OFFSET

W105
H-TASTIMPULS
H SAMPLING PULSE
W105
BLATT 2
SHEET 2
ZUR GRUNDPLATTE
TO MOTHERBOARD

PHASE Q-SIGNAL

TONFALLE EIN / AUS · SOUND TRAP ON / OFF

Q-SIGNAL

HÜLLKURVE · ENVELOPE

VIDEO

SY / HÜ · SYNC/ENVELOPE

NULLTASTUNG · ZERO REFERENCE

ZF-SIGNAL · IF SIGNAL

X101

W101

W101
SHEET2 BLATT 2VON GRUNDPLATTE
FROM MOTHERBOARD

X102

W102

W102
BL. 2
SHEET 2ZUR
RÜCKSEITE
TO REAR PANEL

X103

W103

W103
BL. 2
SHEET2ZUR GRUNDPL
TO MOTHERBOARD

X110

W110

W110
BL. 3
SHEET3ZUM HF-TEIL
TO RF SECTION

X106

W106

W106

ZUR RÜCKSEITE
TO REAR PANEL

X107

W107

W107
BL. 2
SHEET2ZUR RÜCKSEITE
TO REAR PANEL

X104

W104

W104
BL. 2
SHEET2ZUR GRUNDPLATTE
TO MOTHERBOARD

19

17

10

6

9

21

24

11

18

8

23

X6

VIDEO AUSGANG
VIDEO OUTPUT

X7

Q-AUSGANG
Q OUTPUTFRONTPLATTE
FRONT PANEL

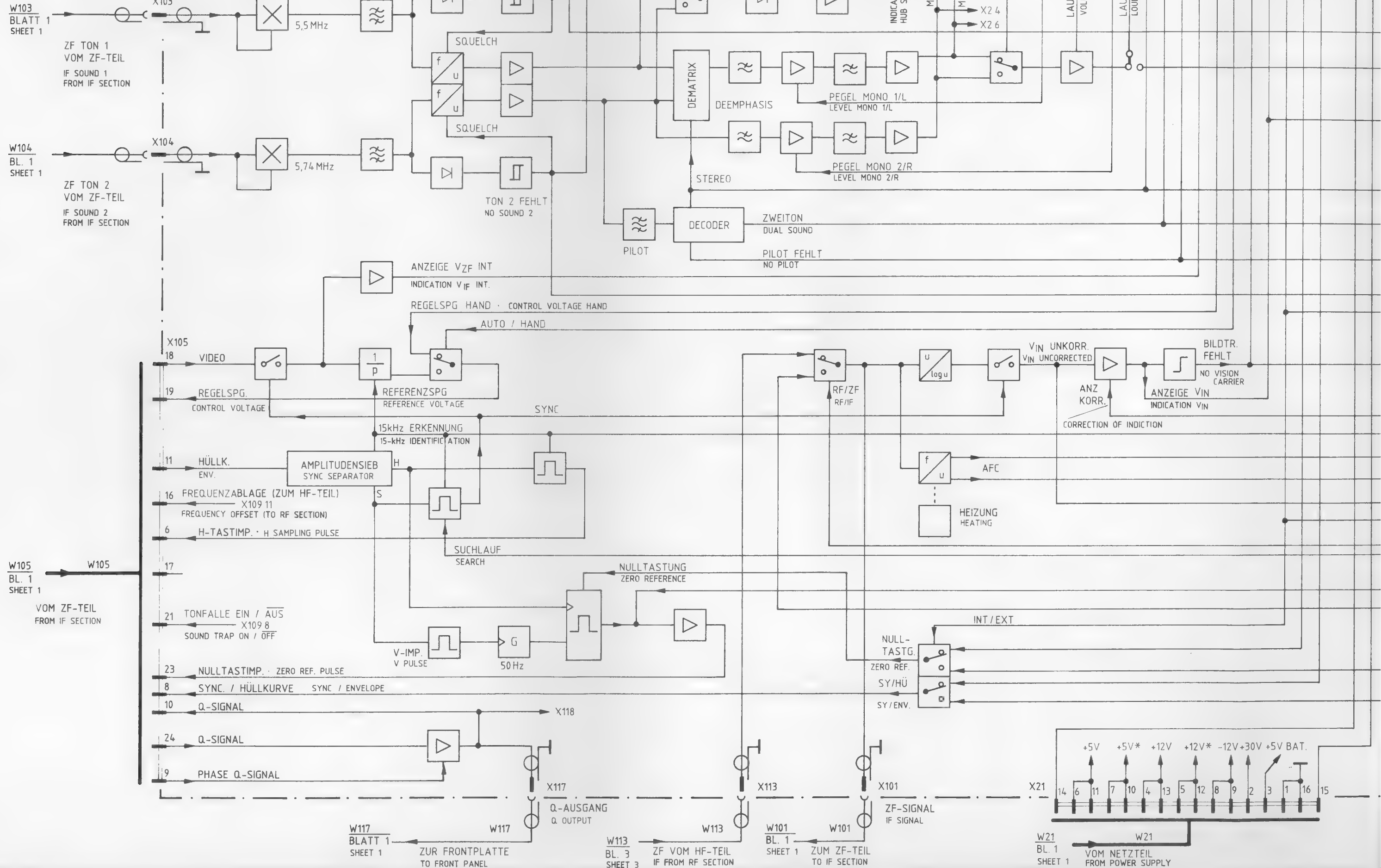
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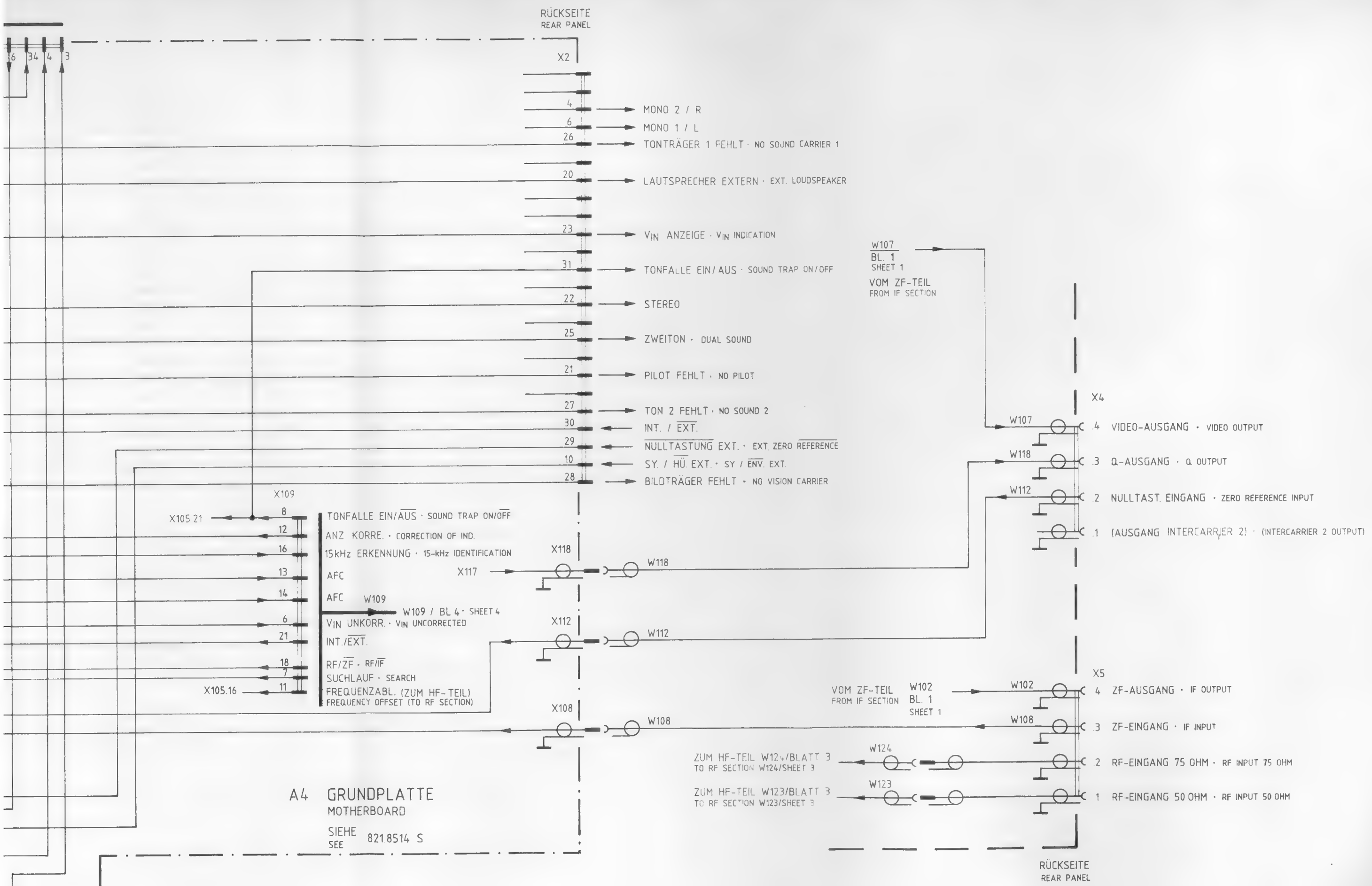
W117

BL. 2 · SHEET 2
VON GRUNDPLATTE
FROM MOTHERBOARDA3
ZF-TEIL /
VIDEOVERSTÄRKERIF SECTION /
VIDEO AMPLIFIERSIEHE
SEE 821.7518 S

ROHDE & SCHWARZ

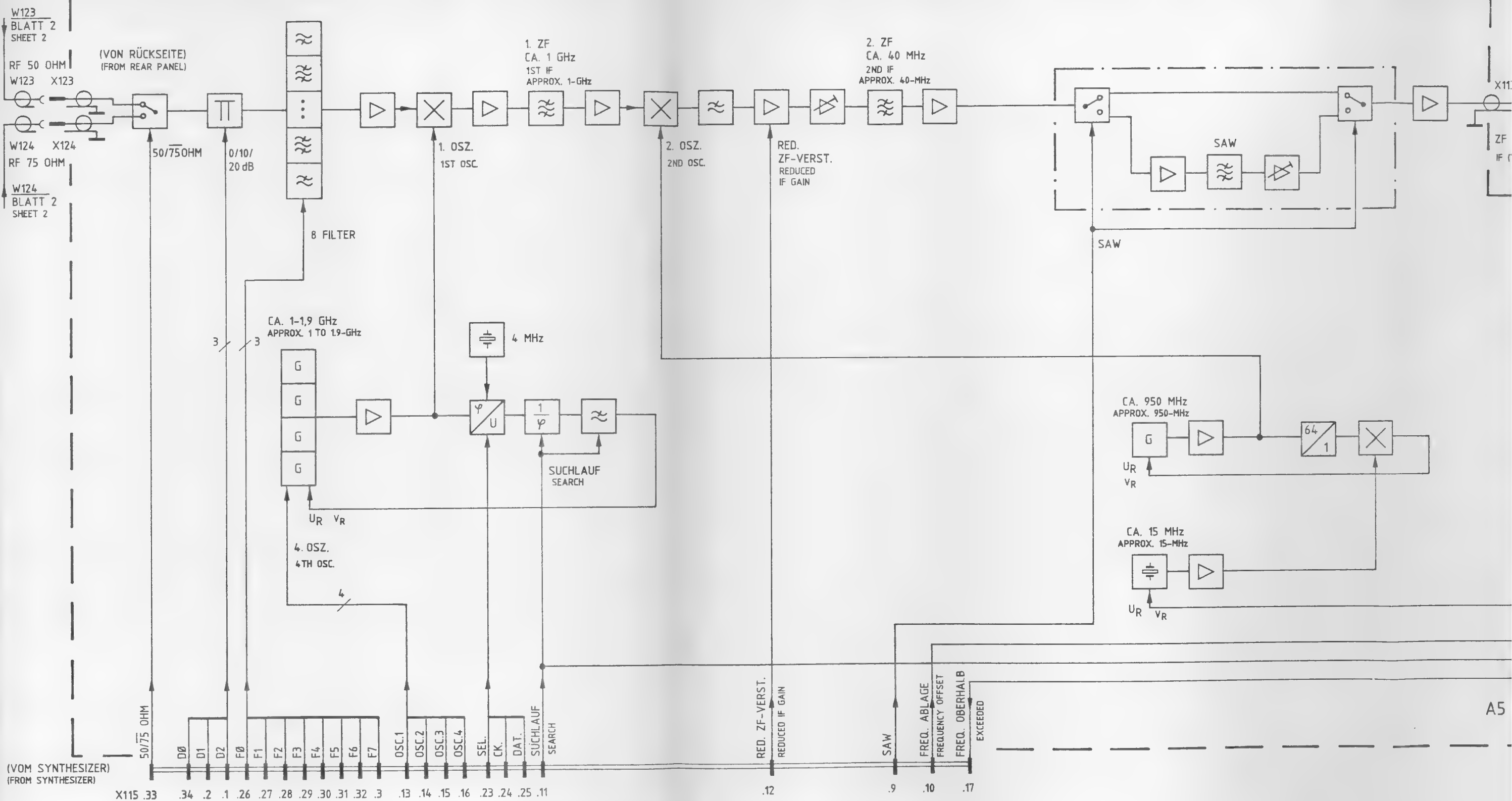
Änd. Zust.	Änderungs- Mittelung	Datum	Name	Änd. Zust.	Änderungs- Mittelung	Datum	Name	Norm	2KGH	Tag	Name	Benennung	Zeichn.-Nr	Blatt-Nr
									Bearb.	2.87	RP / BA	TV-MESSEMPFÄNGER / -DEMODULATOR	821.4019 S	1
									Gepr.			TV TEST RECEIVER / TV DEMODULATOR	reg. i. V. 821.4019 V	v 4 BI
												zu Gerät EMFT	erste Z	

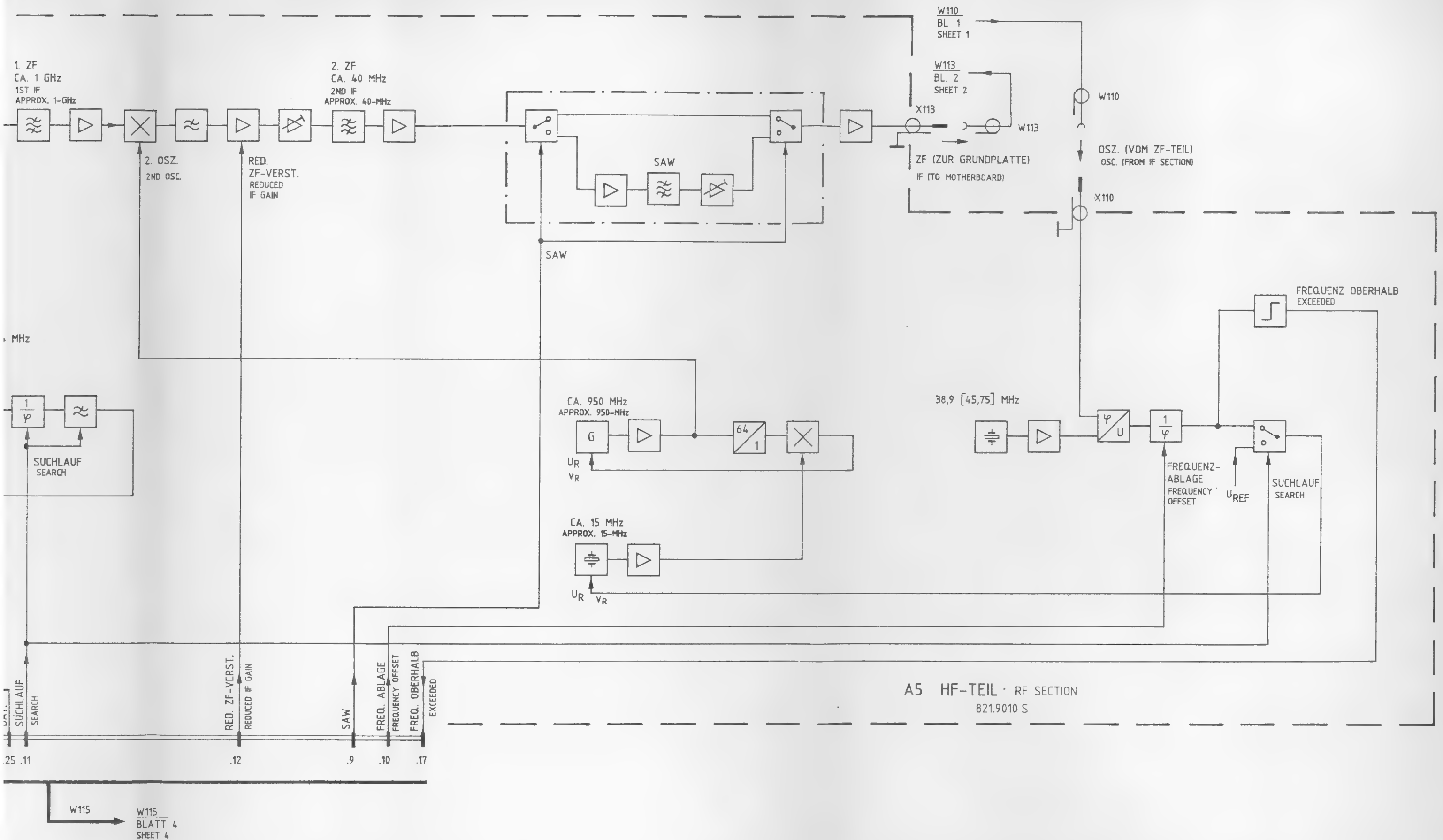




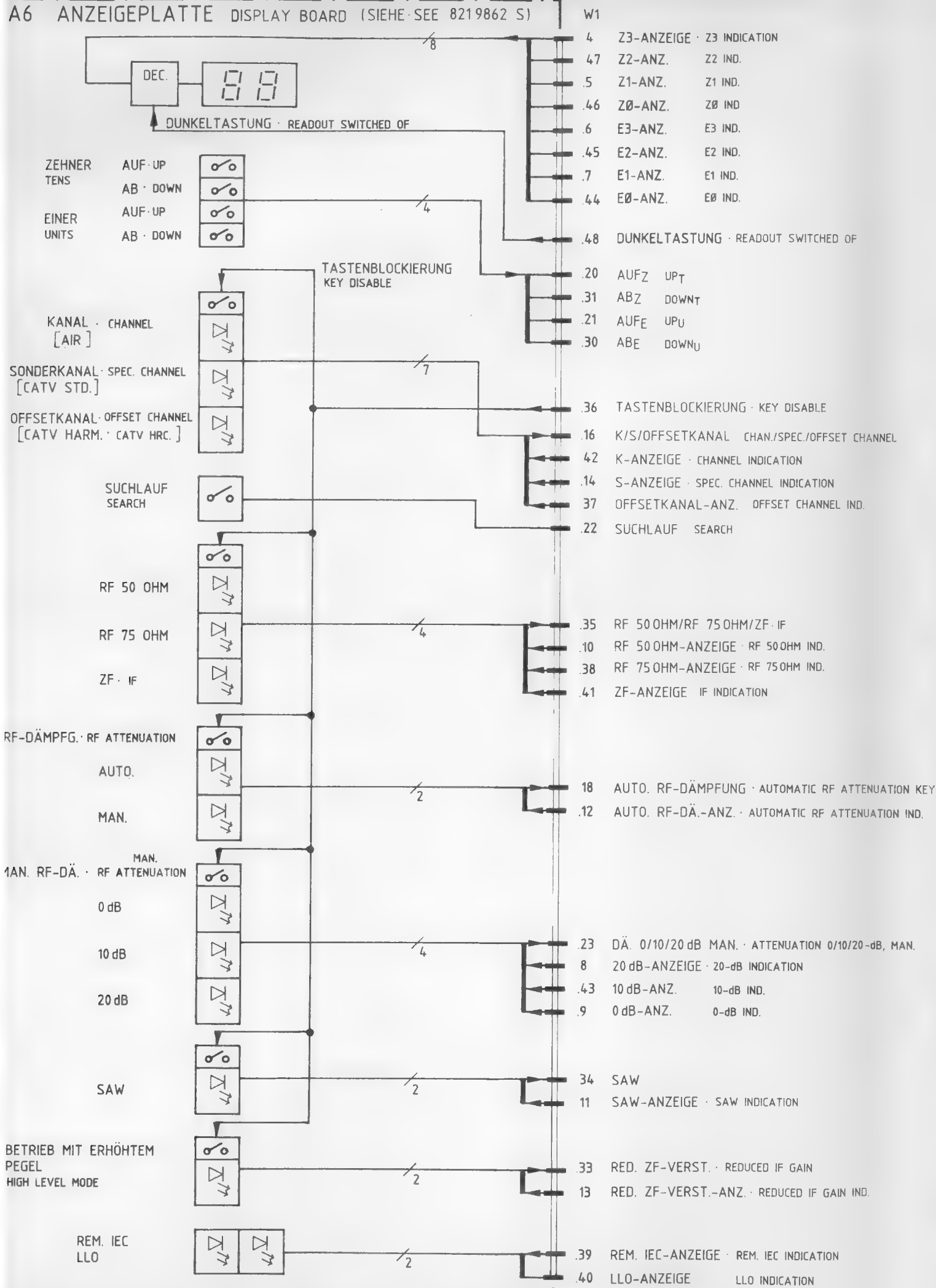
A4 GRUNDPLATTE
MOTHERBOARD

SIEHE
SEE 821.8514 S





A6 ANZEIGEPLATTE DISPLAY BOARD (SIEHE SEE 8219862 S)



RF 50 OHM/RF 75 OHM/ZF · IF
AUTOM. RF-DÄMPF. · AUTO. RF ATTENUATION
SAW
RED. ZF-VERST. · REDUCED IF GAIN
Z3-ANZEIGE · Z3 INDICATION

Z2-ANZ. Z2 IND.
Z1-ANZ. Z1 IND.
Z0-ANZ. Z0 IND.
E3-ANZ. E3 IND.
E2-ANZ. E2 IND.
E1-ANZ. E1 IND.
E0-ANZ. E0 IND.

K-ANZ. · CHAN. INDICATION
S-ANZ. · SPEC. INDICATION
OFFSETK · ANZ. · OFFSET CHANNEL IND

K/S/OFFSETK · CHAN./SPEC./OFFSET CHANNEL
20 dB-ANZ. · 20-dB INDICATION
10 dB-ANZ. 10-dB IND.
0 dB-ANZ. 0-dB IND.

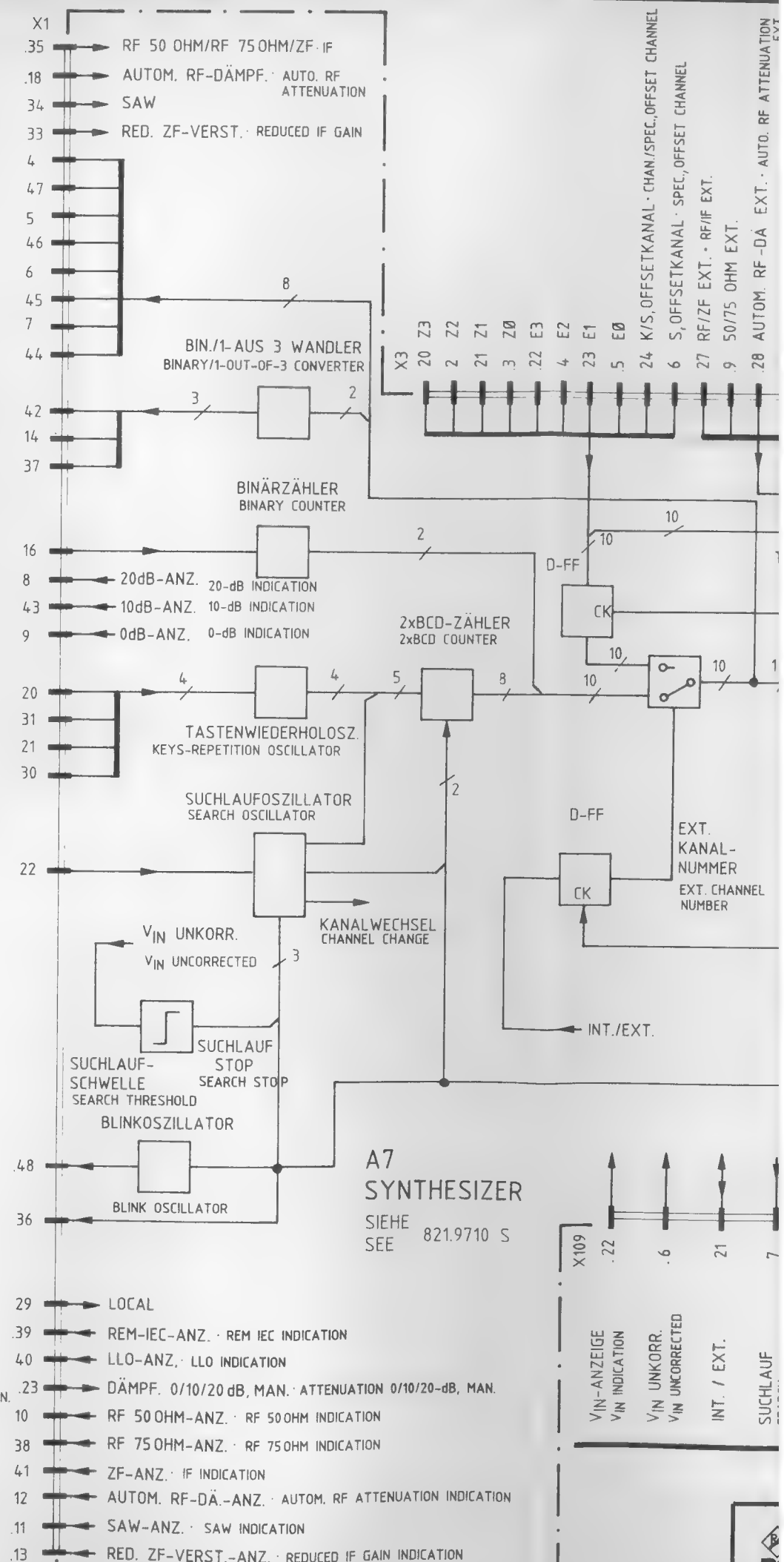
AUFZ UP↑
ABZ DOWN↓
AUF E UP↑
ABE DOWN↓

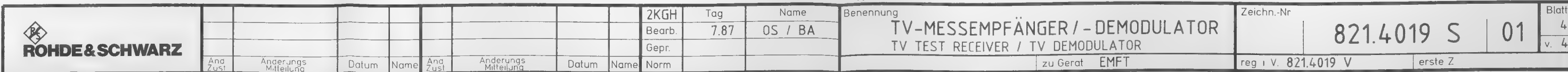
SUCHLAUF · SEARCH

DUNKELTASTUNG · READOUT SWITCHED OF

TASTENBLOCKIERUNG · KEY DISABLE

LOCAL
REM-IEC-ANZ. · REM IEC INDICATION
LLO-ANZ. · LLO INDICATION
DÄMPF. 0/10/20 dB MAN. · ATTENUATION 0/10/20-dB, MAN.
RF 50 OHM-ANZ. · RF 50 OHM IND
RF 75 OHM-ANZ. · RF 75 OHM IND
ZF-ANZ. · IF INDICATION
AUTOM. RF-DÄ.-ANZ. · AUTOM. RF ATTENUATION INDICATION
SAW-ANZ. · SAW INDICATION
RED. ZF-VERST.-ANZ. · REDUCED IF GAIN IND.





ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		01	0787	EMFT TV-MESS-EMPFAENGER	821.4019.01 SA	1
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
A1	ED ANZEIGEPLATTE HIERZU STROML. 821.8366 S	821.8366.02	821.4354.01			
A2	ZE NETZTEIL HIERZU STROML.821.4519S	821.4519.02	821.4354.01			
A3	ED ZF-TEIL/VIDEOVERST. HIERZU STROML. 821.7518 S	821.7518.20	821.4354.01			
A4	ED GRUNDPLATTE HIERZU STROML. 821.8514 S	821.8514.20	821.4354.01			
A5	ED HF-TEIL HIERZU STROML. 821.9010 S	821.9010.20	821.4048.01			
A6	ED ANZEIGEPLATTE HIERZU STROML. 821.9862 S	821.9862.20	821.4048.01			
A7	ED SYNTHESIZER HIERZU STROML. 821.9710 S	821.9710.02	821.4048.01			
B101	EL LAUTSPRECHER 6 OHM 1W LOUDSPEAKER 6OHM 1W HOLMCO 3568/6 OHM	EL 586.7926	821.4354.01			
P101	JD 100UA 78X61 INSTRUMENT GOSSEN N.R&S-ZCHNG.822.1213	822.1213	821.4354.01			
W101	DX KABEL	822.1013	822.0998			
W102	DX KABEL	822.1020	822.0998			
W103	DX KABEL	822.1036	822.0998			
W104	DX KABEL	822.1042	822.0998			
W106	DX KABEL	822.1065	822.0998			
W107	DX KABEL	822.1071	822.0998			
W108	DX KABEL	822.1088	822.0998			
W109	DX BANDKABEL	821.8695	822.0998			
W112	DX KABEL	822.1120	822.0998			
W117	DX KABEL	822.1171	822.0998			
W118	DX KABEL	822.1188	822.0998			
X4	FJ BU.L.LOCH1+2+3+4BNC BNC 4-SOCKET INSERT,50 OH	FJ 063.5800	821.4354.01			
X5	FJ BU.L.LOCH1+2+3+4BNC BNC 4-SOCKET INSERT,50 OH	FJ 063.5800	821.4354.01			
X6	FJ EINBAUBUCHSE SYST.BNC BNC-CONNECTOR UG 625CIU ROSENBERG. 51K-503-200-P4	FJ 099.9186	821.4354.01			
BIS/TO X9			- ENDE -			

821.4019.01 SA BL 1-





ROHDE & SCHWARZ

Unternehmensbereich
Rundfunk- und Fernsehtechnik

Circuit Description

TV Test Receiver

EMFT RF Section

821.9010

Table of Contents

1	RF Circuit	1.1
2	Conversion to 1st IF	1.1
3	Generation of 1st Oscillator Frequency	1.1
4	Oscillator 1	1.1
5	Conversion to 2nd IF	1.2
6	Generation of 2nd Oscillator Frequency	1.2
7	Frequency Offset Correction	1.2
8	IF Processing	1.2
9	Coding Options	1.3

1 RF Circuit

See 821.9010 S, sheet 2

The RF input signal is applied from the 50- Ω input to the impedance converter consisting of diodes V161 and V164. An RF signal applied to the 75- Ω input is converted by T161 to a characteristic impedance of 50 Ω . An attenuation of either 10 or 20 dB can be connected via the following RC network. The RF signal is now preselected depending on the selected TV channel. The receiving range is divided into 8 bands. The various filters are connected by a diode network such that only one filter is active at a time and the others are disabled.

2 Conversion to 1st IF

See 821.9010 S, sheet 4

The RF signal thus preselected is applied to the RF stages N261 and N262 and then to the 1st IF converter D261. The corresponding oscillator frequency of approx. 1 to 1.8 GHz is mixed here with the RF signal depending on the TV channel and the 1st IF of approx. 1 GHz is thus generated depending on the standard. This high 1st IF results in excellent image frequency suppression.

3 Generation of 1st Oscillator Frequency

See 821.9019 S, sheet 4

The main part of the circuit is the PLL chip D345. The signal from oscillator 1 (821.9010 S, sheet 3) is amplified by N331 and N333 and applied simultaneously to the 1st converter and to the prescaler input pin 3 of the PLL chip. The prescaler has a fixed ratio of 1:32. The ratio of the tuning divider is set depending on the selected receiver channel such that a frequency of 3.91 kHz is obtained which is compared with the frequency of the 4-MHz oscillator divided by 1024. The control loop is frequency- and phase-locked.

The PLL chip obtains the information for the divider setting via a serial 14-bit data word from the synthesizer board (821.9710 FS). A data word with the edge of the clock signal and SEL "H" is read into the shift register. The divider accepts the new data with the SEL input "H" and a new frequency is selected. Pin 10 drives V354, pin 11 is the feedback input. V354 generates the control voltage so that a tuning voltage of approx. 1 to 28 V is produced which is applied to oscillator 1.

The time constant of the tuning voltage circuit is modified in search mode for the duration of the tuning procedure via V365, V361 and V362 and the rise time of the tuning voltage is thus shortened.

4 Oscillator 1

See 821.9010 S, sheet 3

As a result of the wide frequency range from 1047 MHz to 1954 MHz, four oscillators, each working in its optimum range, are used to generate the 1st oscillator frequency. Depending on the selected receiver channel, the synthesizer unit activates the matching oscillator via diodes V2, V22, V42 and V62. The oscillator frequency is divided by the tuning diodes V3, V23, V24, V43 and V63. The signal is coupled inductively via L1-L4 to L5 or L6, amplified by N81 and is then available at pin O10.

5 Conversion to 2nd IF

See 821.9010 S, sheet 4

The 1st IF is amplified by N265, attenuated by 3 dB for decoupling, connected via an IF bandpass (image frequency suppression) to N292 and amplified. The IF signal is now converted by D295 (2nd conversion) to the final, standard IF. The 2nd IF obtained in this way is applied via a lowpass for further IF processing (821.9010 S, sheet 5).

6 Generation of the 2nd Oscillator Frequency

See 821.9010 S, sheet 5

The 2nd oscillator (V425) oscillates - locked to the 14.99766-MHz reference oscillator - at a frequency of 959.85. The oscillator frequency is coupled inductively via O422 to O421 and applied from N431 to the 2nd converter and the divider D435. The divider ratio of D435 is fixed so that a frequency of 15 MHz is present at pin 6. This is compared with the frequency of a reference oscillator (V453) and a control voltage for tracking the 2nd oscillator (V425) is obtained using the differential amplifier V461 A-E. The reference oscillator itself is connected via X444 to the frequency offset correction (821.9010 S, sheet 6).

7 Frequency Offset Correction

See 821.9010 S, sheet 6

A crystal oscillator generates a reference frequency of 38.9 MHz which is compared by D620 with the frequency of the auxiliary oscillator in the IF module (821.7518 S, sheet 2). This auxiliary oscillator is connected in turn via a PLL to the receiver IF. The control voltage for the reference oscillator V453 (821.9010 S, sheet 5) is generated by the integrating components N630A and N630B. In the case of a receiver frequency tuning error, a High signal is generated by the IF module (821.7518 S, sheet 2) and applied to pin 1 of D630 via L119, X630. R636 is thus connected in parallel to R639 and the time constant of the PLL is shortened.

8 IF Processing

See 821.9010 S, sheet 5

The IF from the 2nd converter is applied to V381. The gain of V381 can be reduced by 10 dB using a switch. When receiving only a few transmitters or when operating as a test demodulator, the S/N ratio is thus improved with simultaneous boosting of the input level. V397 amplifies the IF signal, R398 determines the gain and thus the IF output level. The IF signal is applied further via the bandpass 2nd IF (filtering out oscillator IF and 1st IF) to V405. The signal is applied directly to V411 in normal mode via the switching diodes V500-V506 and routed further to the IF output. In SAW mode the IF signal is preselected further by a SAW filter.

In order to compensate the high attenuation of the SAW filter, the signal is amplified in push-pull mode by V512-V520 and matched to the low-impedance input of the SAW filter D520. N521 amplifies the output signal with low noise. The level is matched to the direct IF signal by R526, R528 and V527. The IF signal selected via the SAW filter is now applied to V411 via C527, V506 and C505. The IF output signal is available at X411 and is routed further to the IF module (821.7518 S, sheet 1).

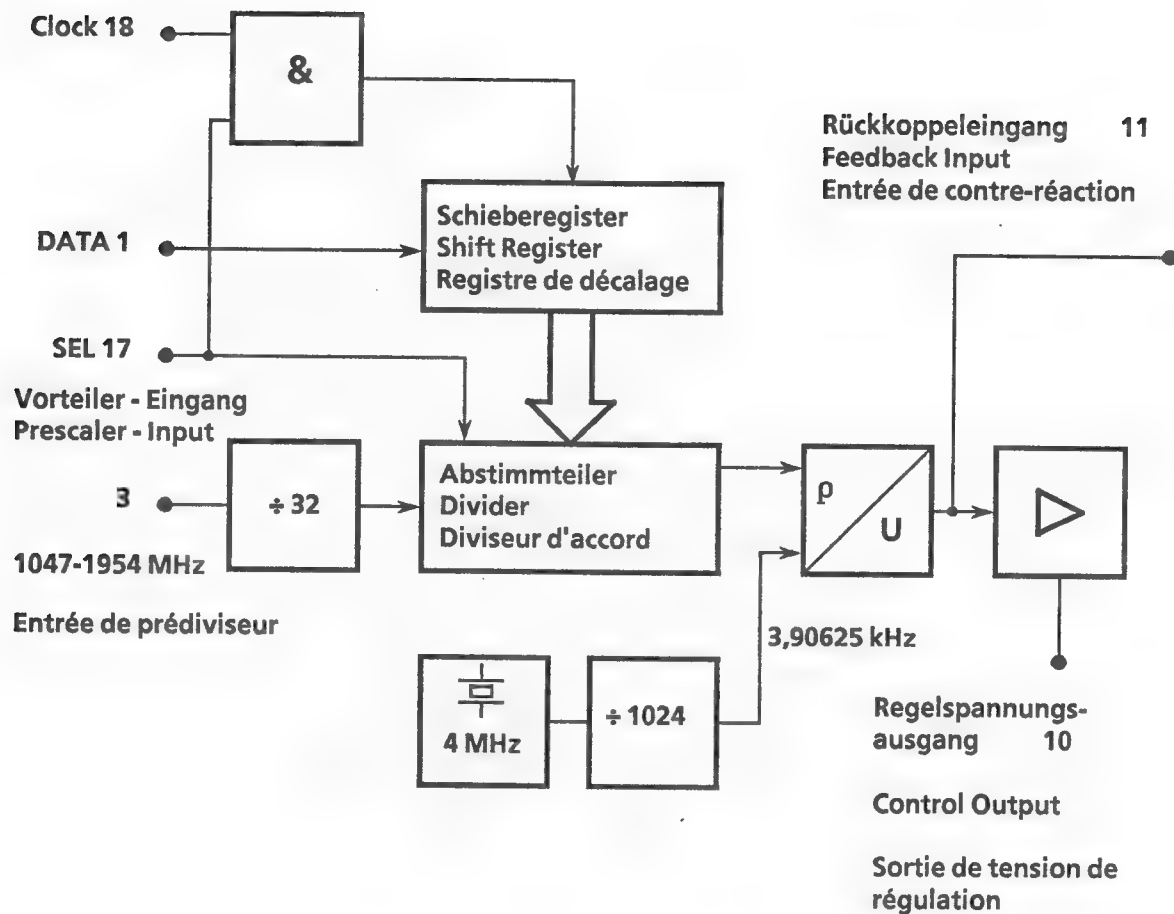
9 Coding Options

Coding jumper	Circuit diagram	Position	Function
X 187	821.9010 S, sheet 2	1-2 2-3	Normal operation 100-MHz trap OFF
X 240	"	1-2 1-3 2-4	Normal operation Preselection output at X188 1st IF conversion input at X188
X 261	821.9010 S, sheet 4	1-2 1-3 2-4	Normal operation Preselection output with amplification at X262 1st IF conversion input at X262
X 263	"	1-2 2-3	Normal operation 4-fold oscillator output at X265
X 264	"	1-2 1-3 2-4	Normal operation 1st IF conversion output at X266 Bandpass 1st IF input at X266
X 271	"	1-2;3-4 1-3;2-5	Normal operation 1st IF conversion output with amplification at X270 Pin 5 = ground
X 279	"	1-2;3-4 1-3;2-4	Normal operation Bandpass 1st IF output at X280; pin 5 = ground
X 294	"	1-2 1-3 2-4	Normal operation Bandpass 1st IF output with amplification at X295 2nd IF conversion input at X295
X 296	"	1-2 2-3	Normal operation Oscillator output for 2nd IF at X293
X297	"	1-2 2-3	Normal operation 2nd IF conversion output at X298
X299	"	1-2 2-3	Normal operation C296 shorted
X 425	821.9010 S, sheet 5	1-2 1-2open	Normal operation 2nd oscillator OFF
X 431	"	1-2 1-2open	Normal operation 2nd oscillator disconnected
X 444	"	1-2 2-3	Normal operation 1st reference oscillator not linked to frequency offset correction, adjustment using R447

9 Coding Options (continued)

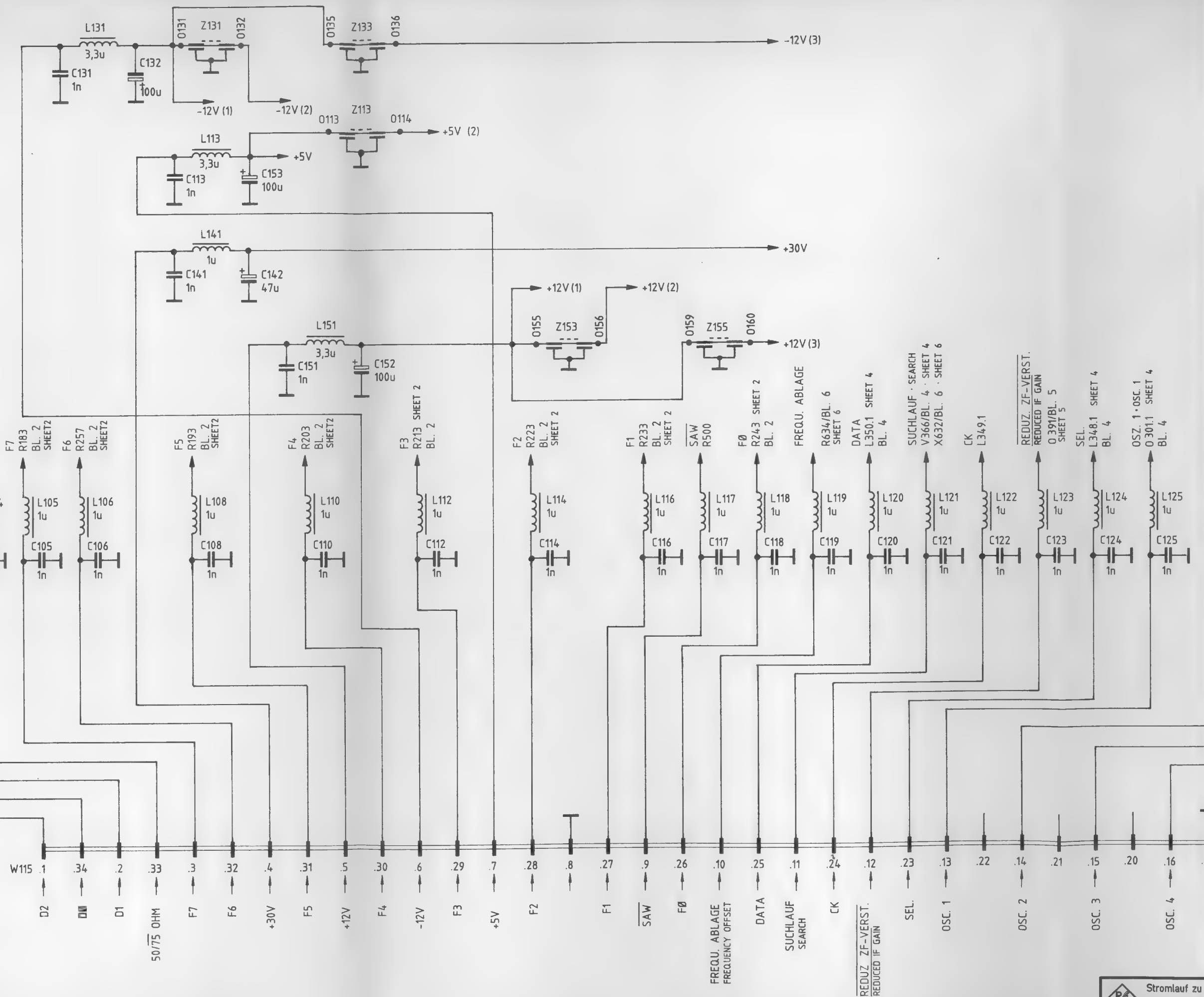
Coding jumper	Circuit diagram	Position	Function
X 484	821.9010 S, sheet 5	1-2 2-3	Normal operation 2nd oscillator free-running
X 512	"	1-2 1-3 2-4	Normal operation Bandpass 2nd IF output at X513 SAW input at X513 with amplification
X 514	"	1-2 1-3 2-4	Normal operation Bandpass 2nd IF output at X513 with amplification SAW input at X513 without amplification
X 520	"	1-2 1-3 2-4	Normal operation SAW output at X521 SAW amplifier input at X521
X 600	"	1-2 1-2open	Normal operation 2nd reference oscillator OFF
X 631	"	1-2 2-3 2-4	Normal operation Frequency offset correction disabled Phase offset of IF is simulated As above except negative
X632	"	1-2 2-3	Normal operation Automatic switch-off of frequency offset correction during search run disabled

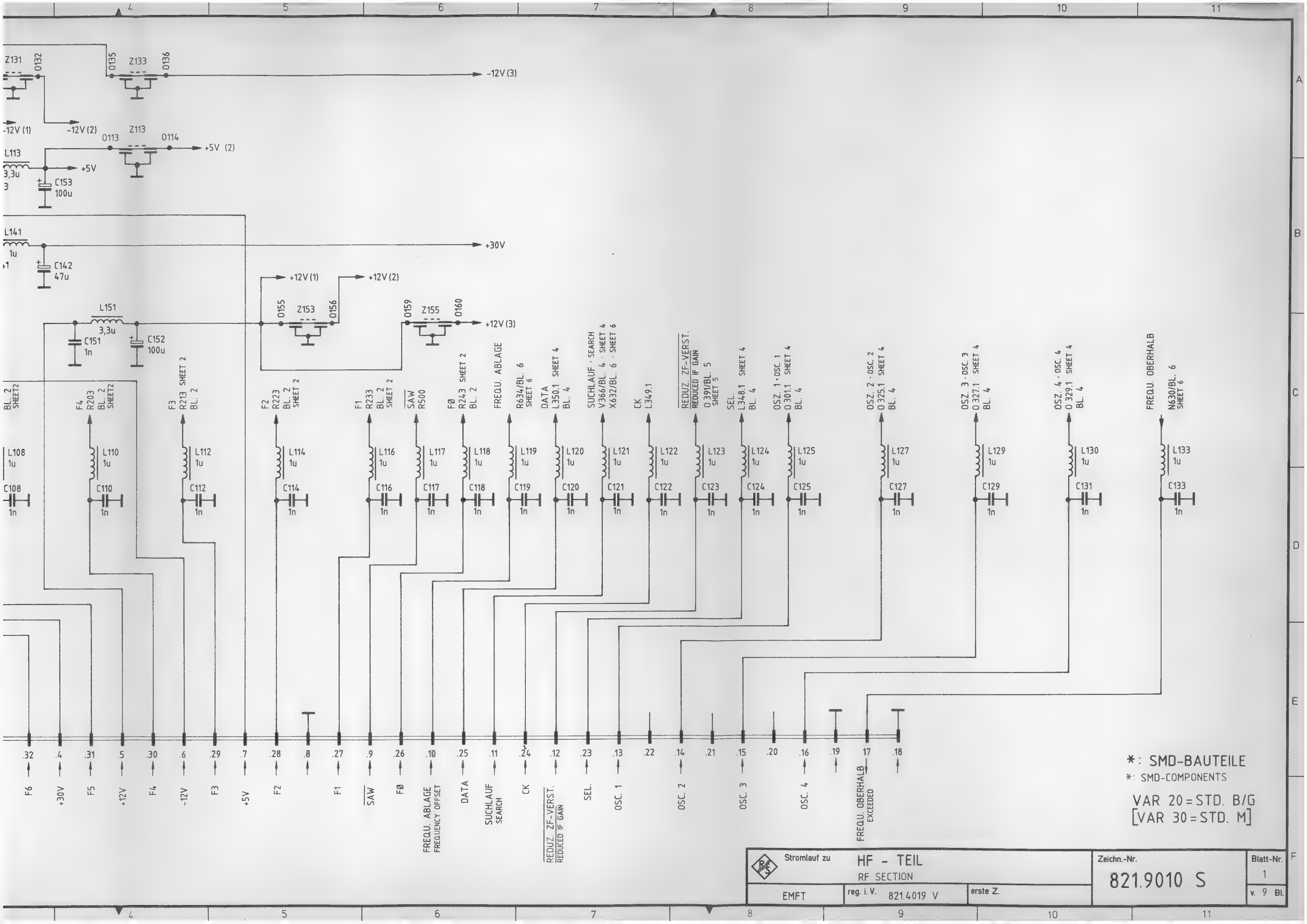




Blockschaltplan / Block Diagram / Synoptique SP 5051

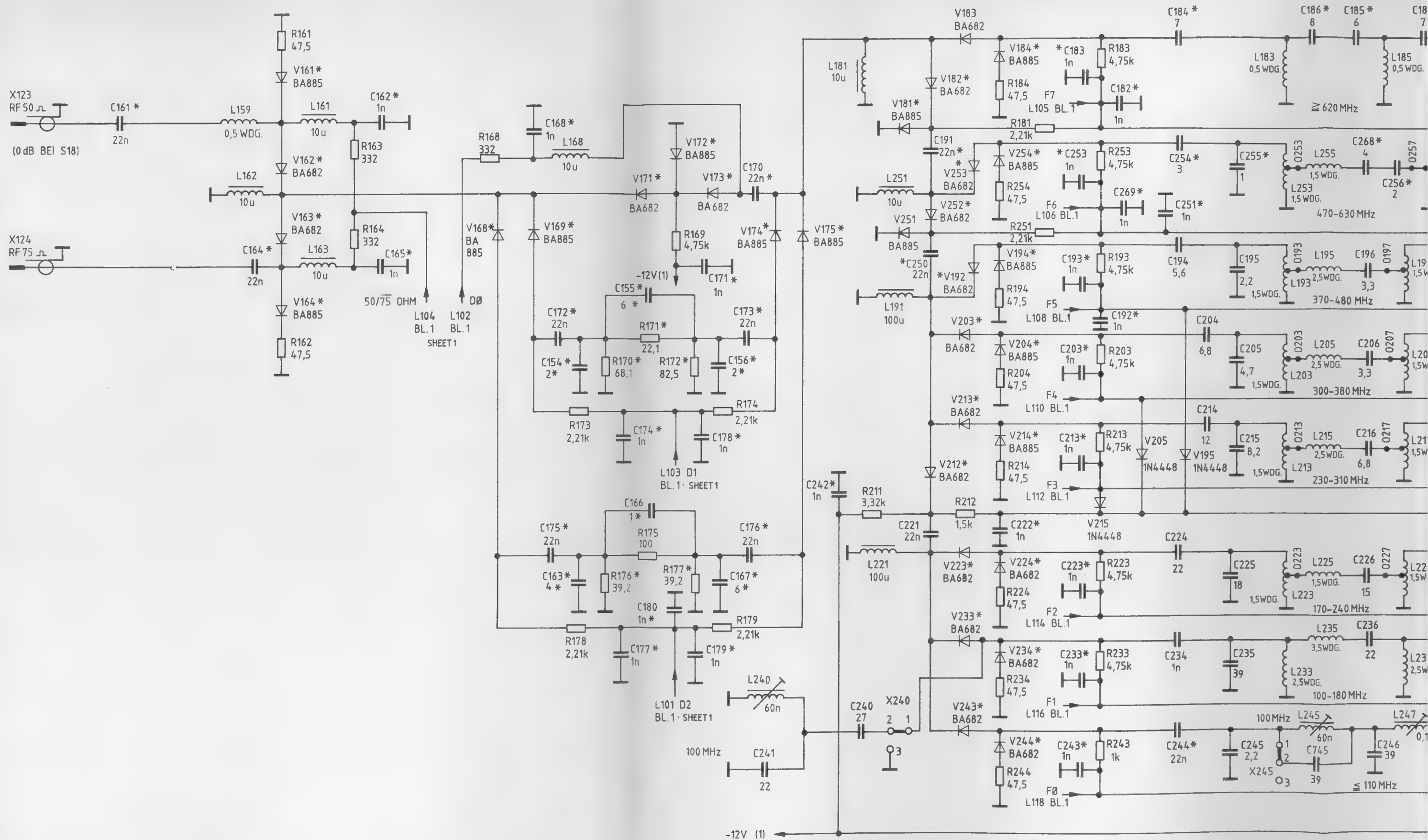
SIEBUNG
FILTERING





UMSCHALTUNG 50 / 75 OHM
50/75-OHM SWITCHOVER

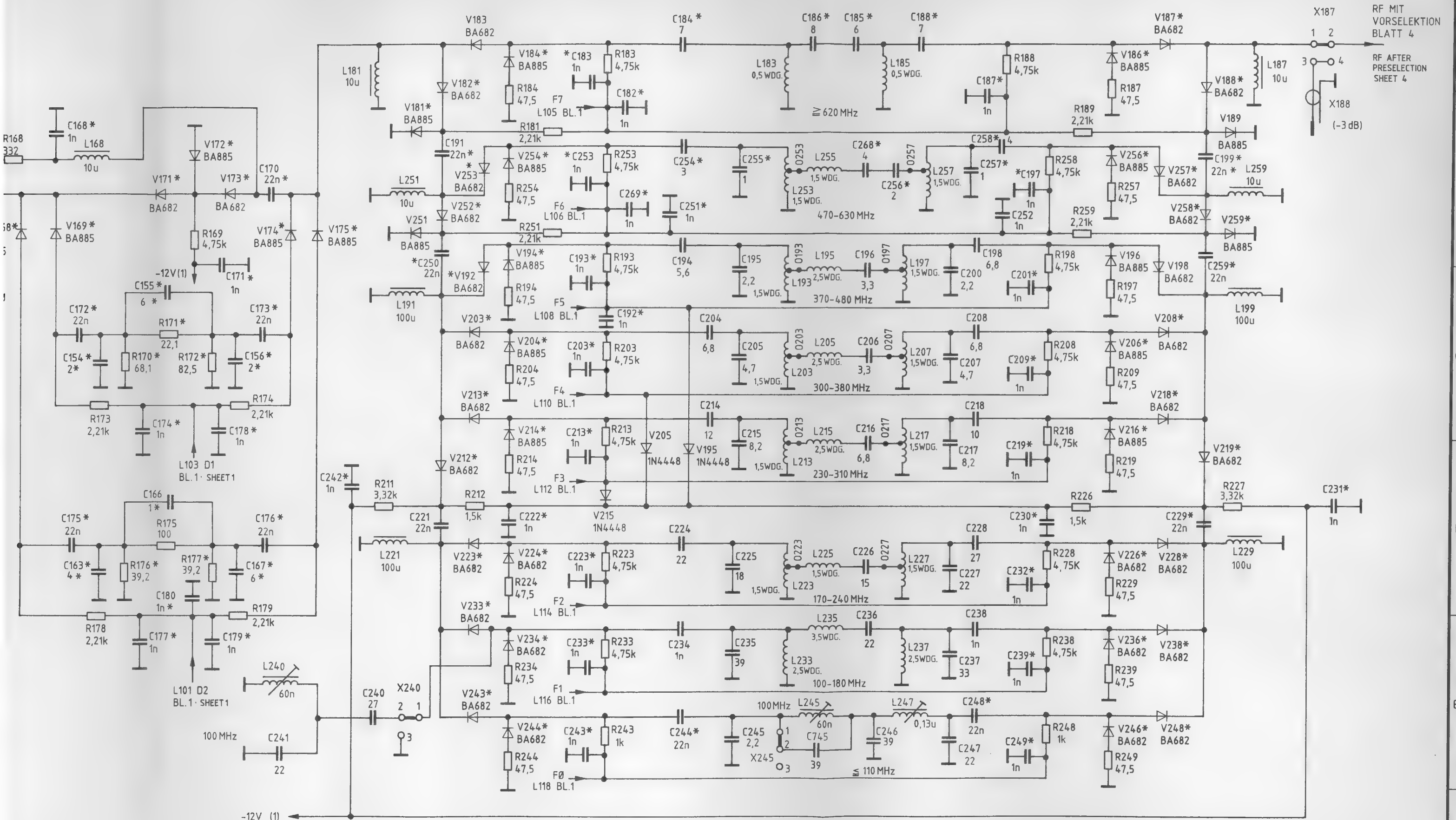
EINGANGSDÄMPFUNG 0 / 10 / 20 dB
0/10/20-dB INPUT ATTENUATION

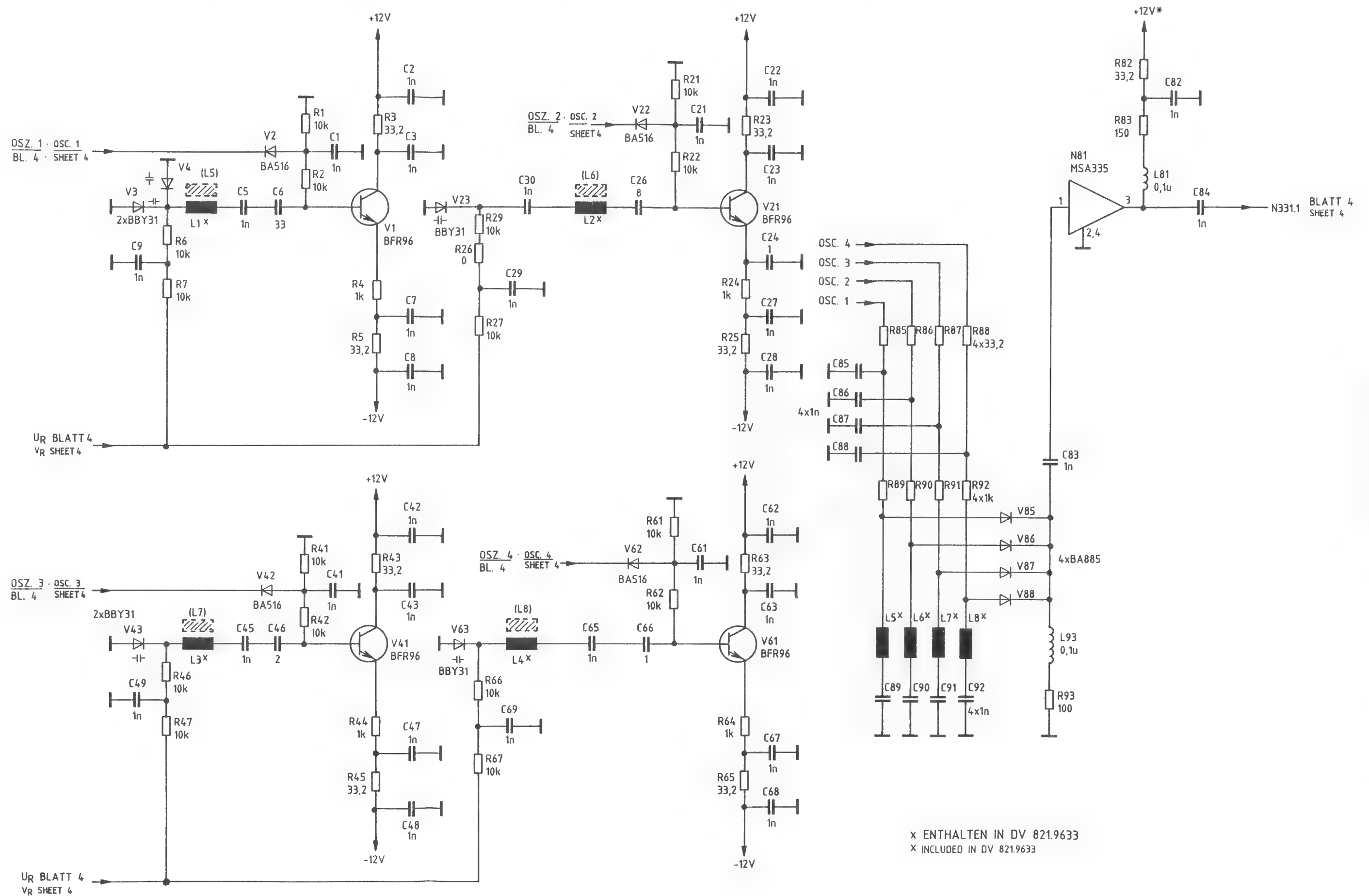


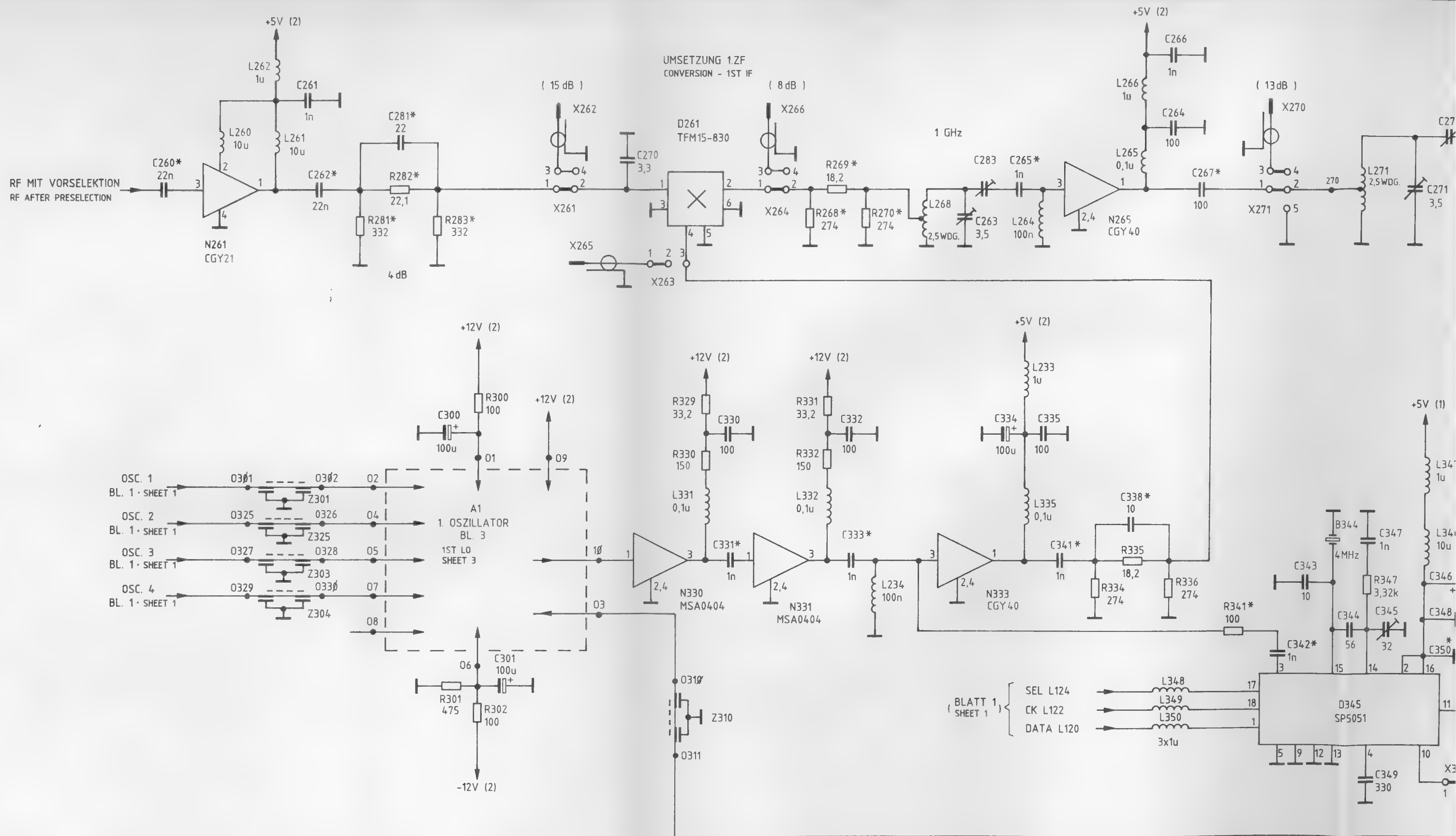
ROHDE & SCHWARZ

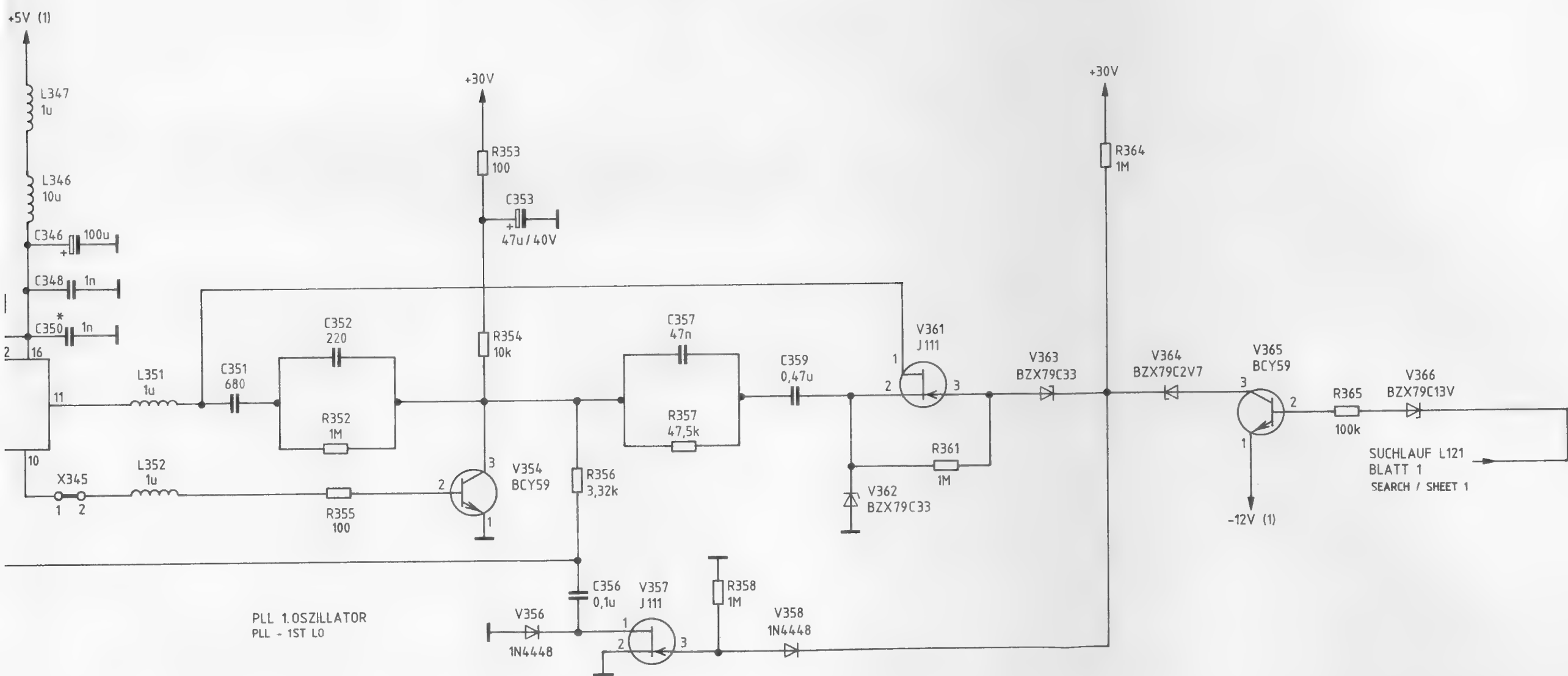
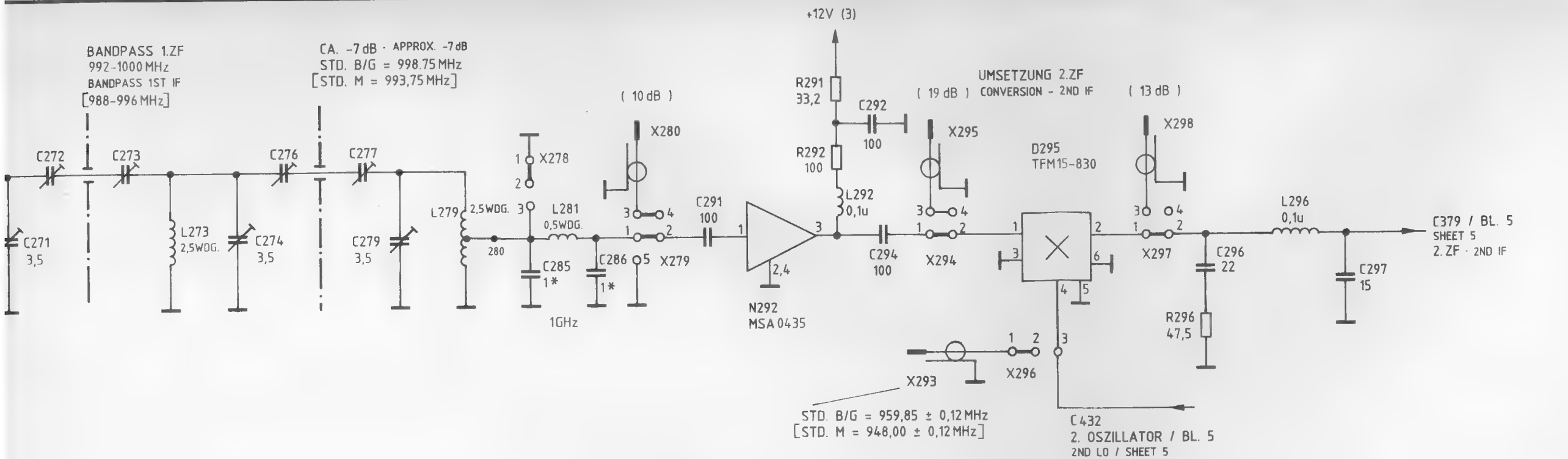
gezeichnet	bearbeitet	geprüft	normgepr.
7.87	7.87		
BA	PI		
B	OS		
39285	4.88		
40163	11.88		
D			
40163			

EINGANGSDÄMPFUNG 0 / 10 / 20 dB
0/10/20-dB INPUT ATTENUATION



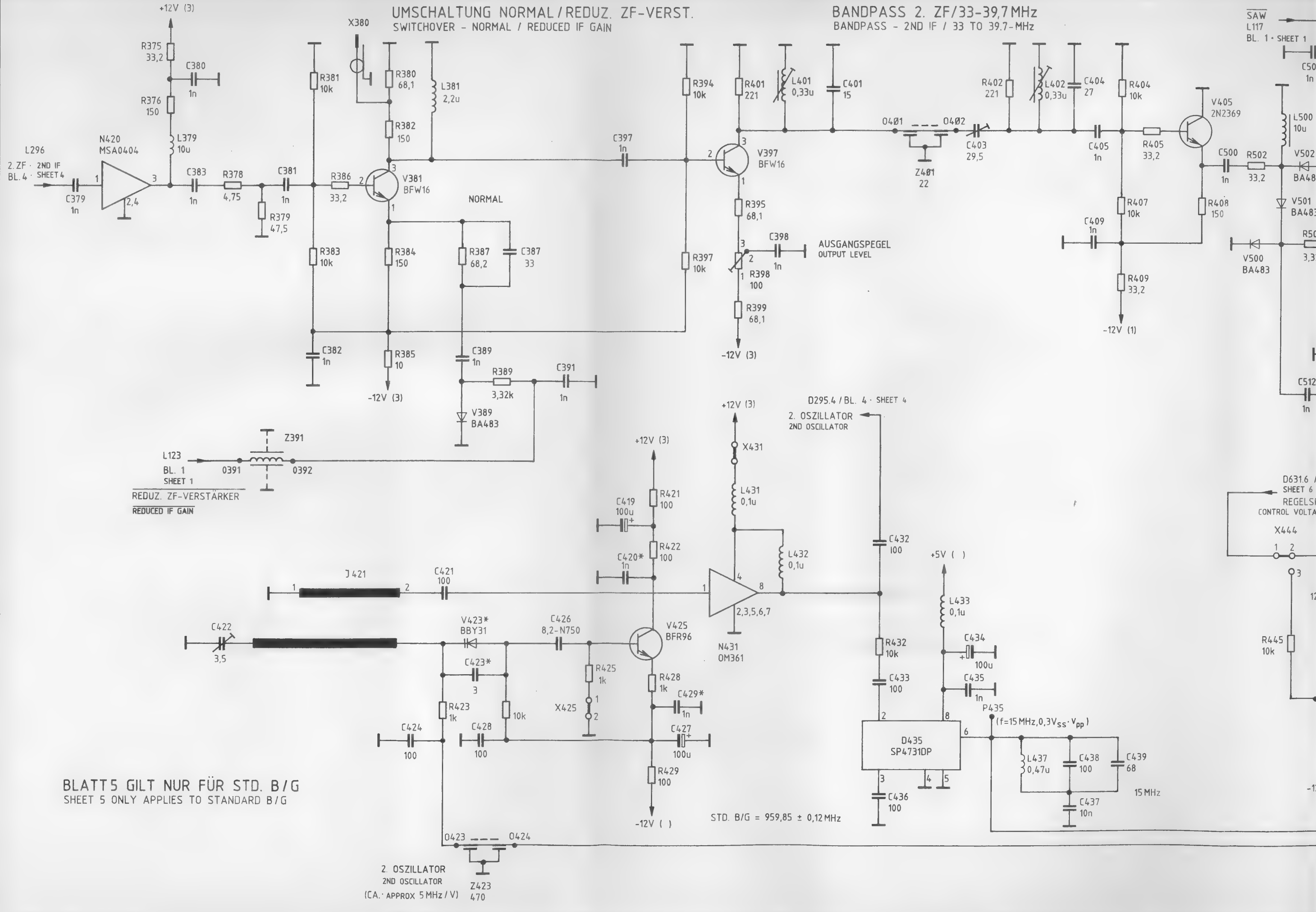


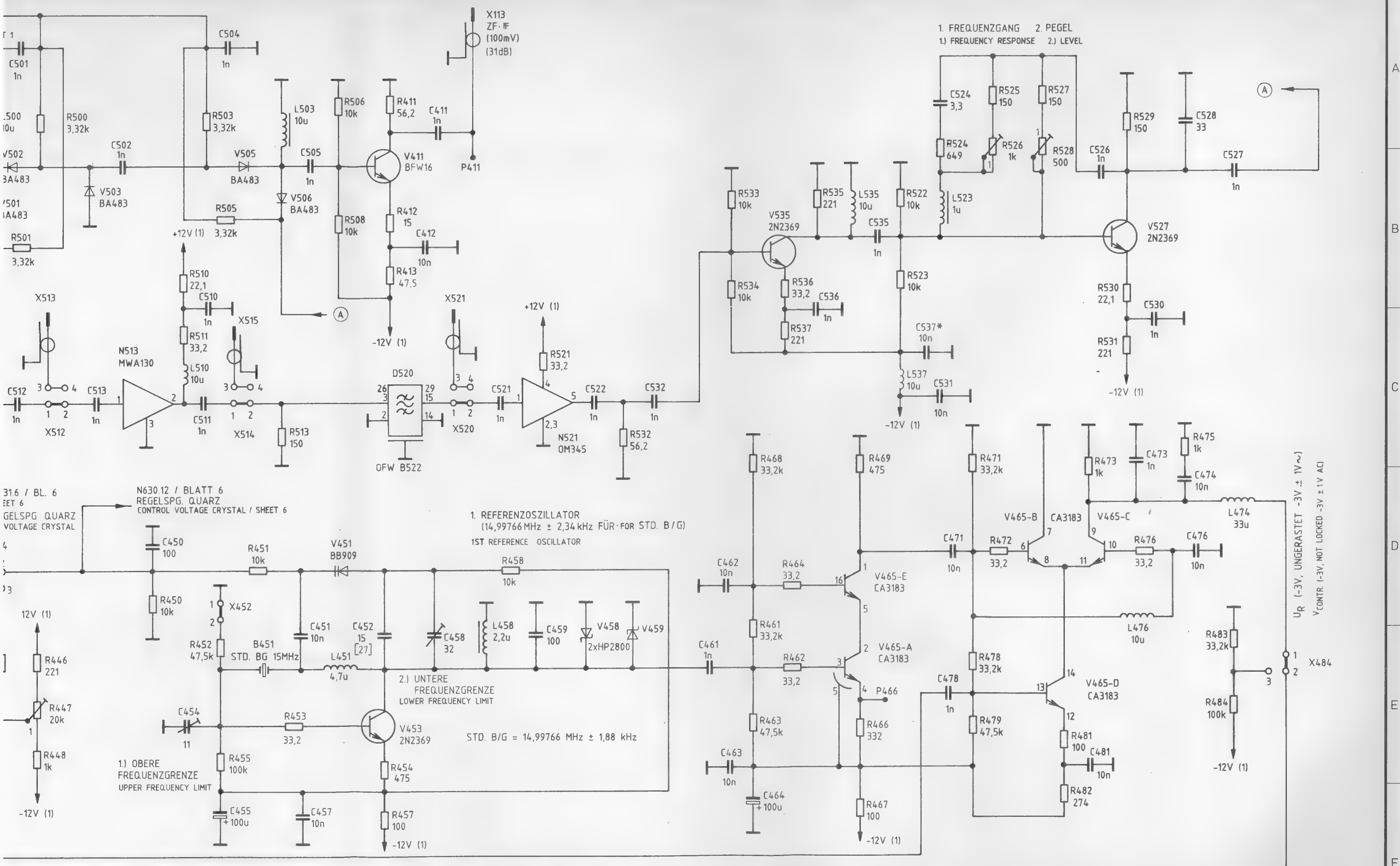





A
B
C
D
E
F

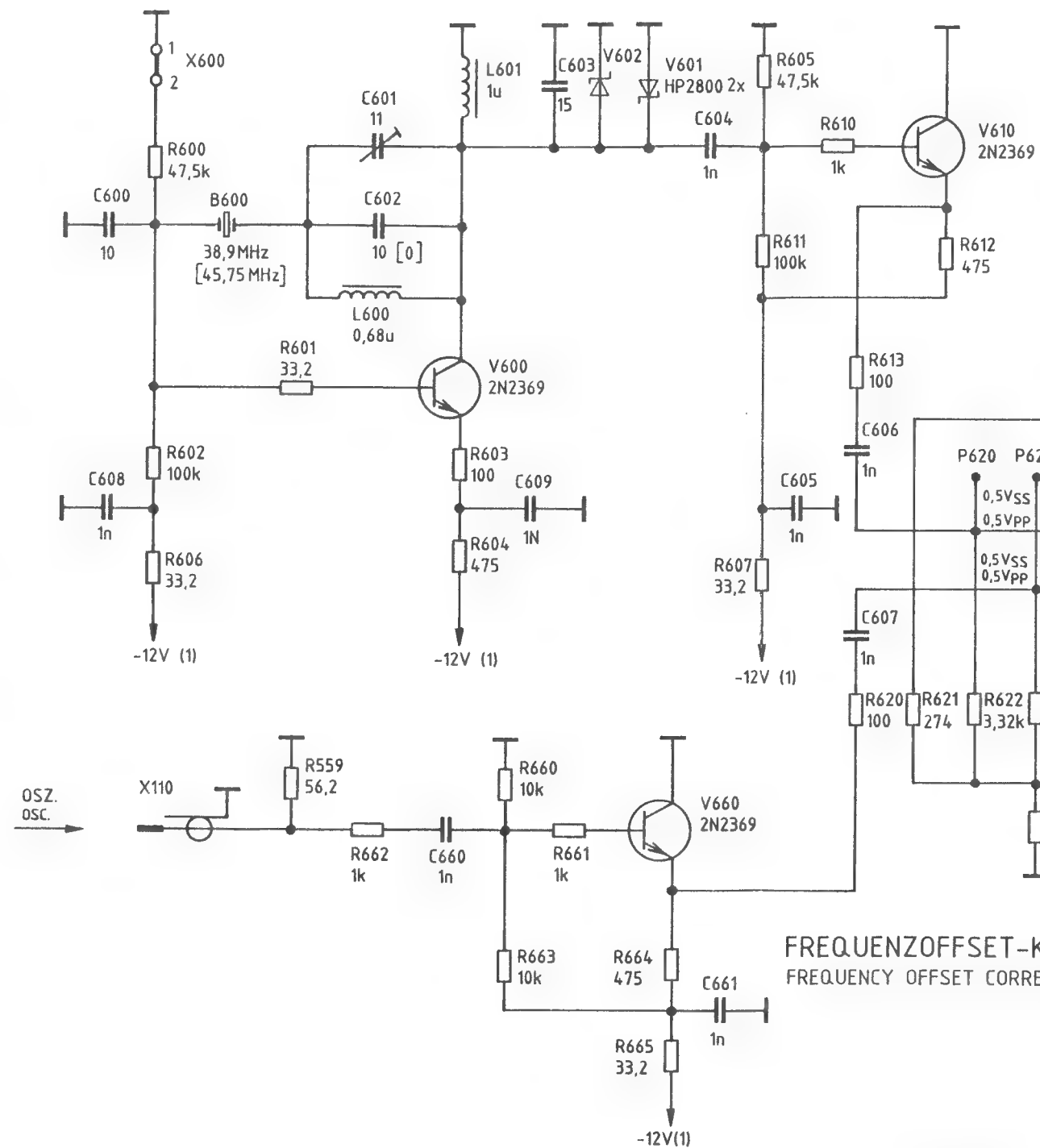
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	A	39285	11.87	PI	D	40163	11.88	OS	2KGH	Tag	Name	Benennung HF-TEIL RF SECTION	Zeichn.-Nr. 821.9010 S	Blatt-Nr. 5 v. 9 Bl.
	B	39285	1.88	PI					Bearb.	9.87	PI / BA			
	C	40163	4.88	OS					Gepr.					
	And. Zust.	Änderungs-Mitteilung	Datum	Name	And. Zust.	Änderungs-Mitteilung	Datum	Name	Norm					
												zu Gerät: EMFT			reg. i V 821.4019 V	erste Z

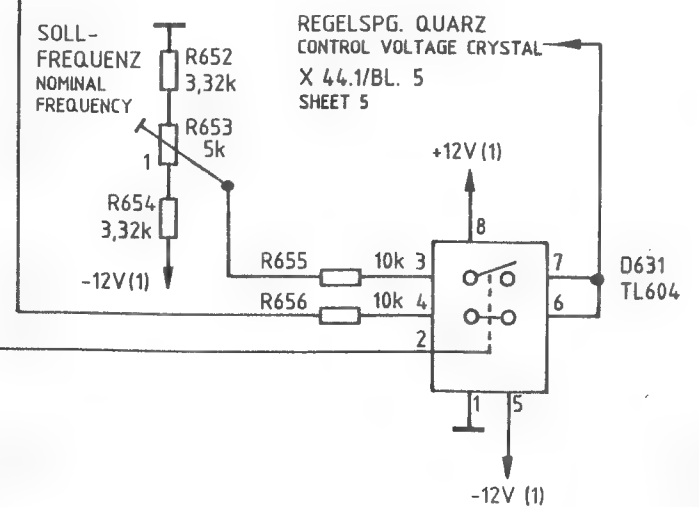
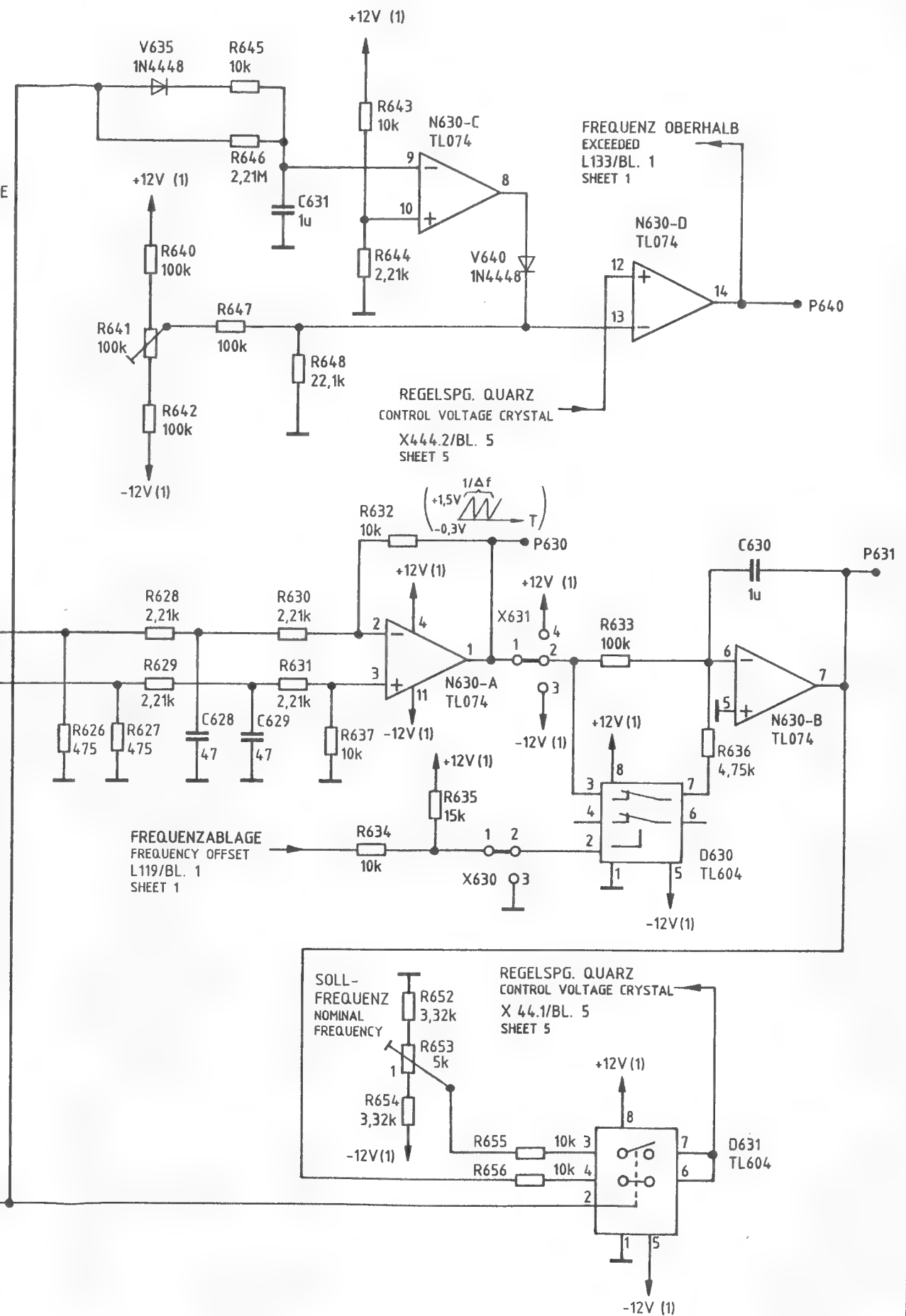
2. REFERENZOSZILLATOR 2ND REFERENCE OSCILLATOR



FREQUENZOFFSET-KORREKTUR FREQUENCY OFFSET CORRECTION

SUCHLAUF
SEARCH
L121.1/BL. 1
SHEET 1

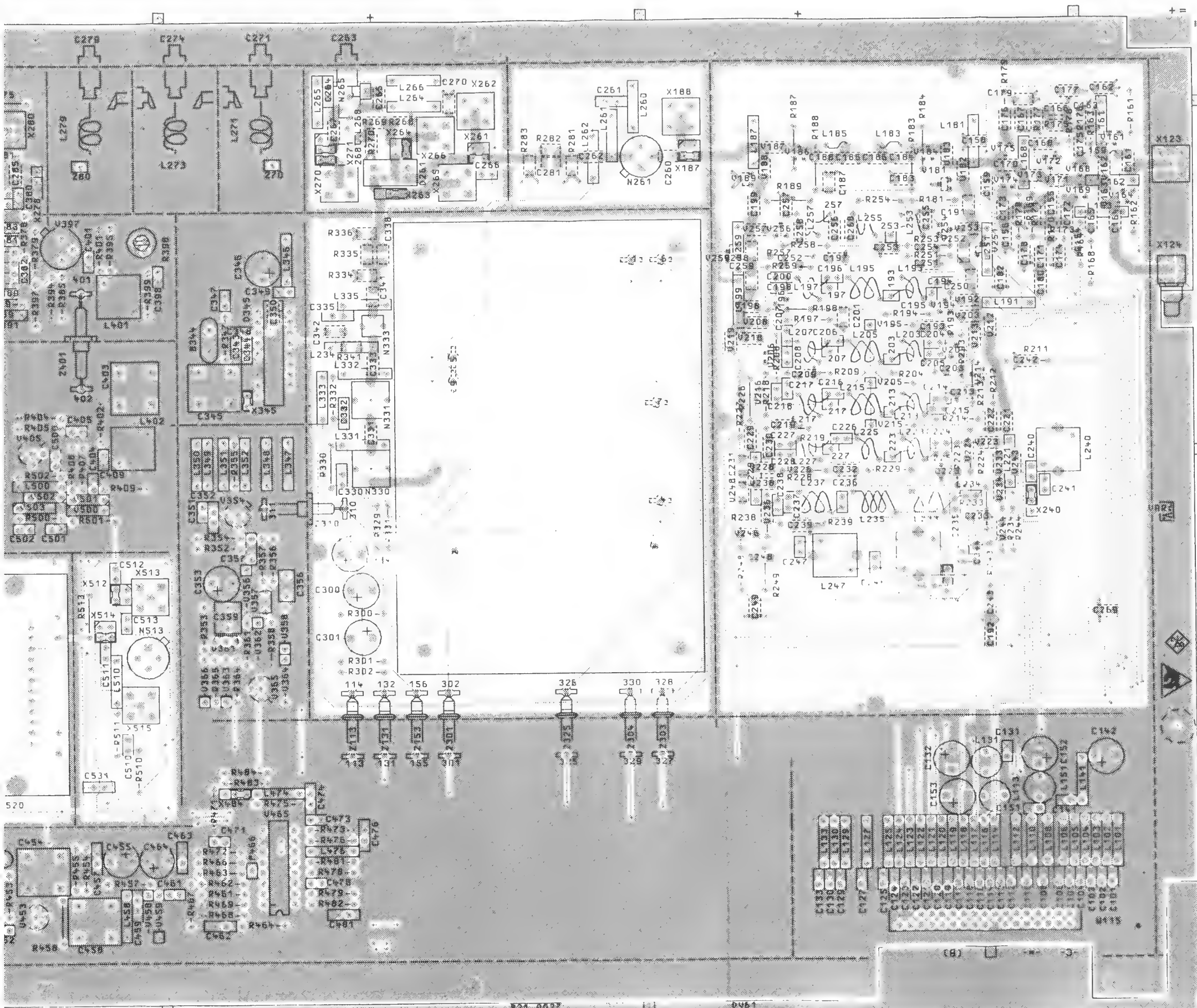
SCHALTSCHWELLE
OBERE FREQUENZGRENZE
BEI SUCHLAUF
SWITCHING THRESHOLD-
UPPER FREQUENCY LIMIT
IN SEARCH MODE



VARIANTENERKLÄRUNG VAR EXPLANATION

STD.	VAR 20	B / G	VAR 30	M	AMERIKA
B451	15 MHz		14,81482 MHz		
B600	38,9 MHz		45,75 MHz		
C401	15			3,3	
C404	27			15	
C452	15			27	
C510	1n				
C511	1n				
C512	1n				
C513	1n				
C521	1n				
C522	1n				
C524	3,3				
C526	1n				
C527	1n				
C528	33				
C530	1n				
C531	10n				
C532	1n				
C535	1n				
C536	1n				
C537	10n				
C602	10				
D520	OFWB522				
L500	10u				
L503	10u				
L510	10u				
L523	1u				
L535	10u				
L537	10u				
N513	MWA 130				
N521	OM345				
R500	3,32k				
R501	3,32k				
R503	3,32k				
R505	3,32k				
R510	22,1				
R511	33,2				
R513	150				
R521	33,2				
R522	10k				
R523	10k				
R524	649				
R525	150				
R526	1k				
R527	150				
R528	500				
R529	150				
R530	22,1				
R531	221				
R532	56,2				
R533	10k				
R535	221				
R536	33,2				
R537	221				
R534	10k				
V500	BA483				
V501	BA483				

[illegible]

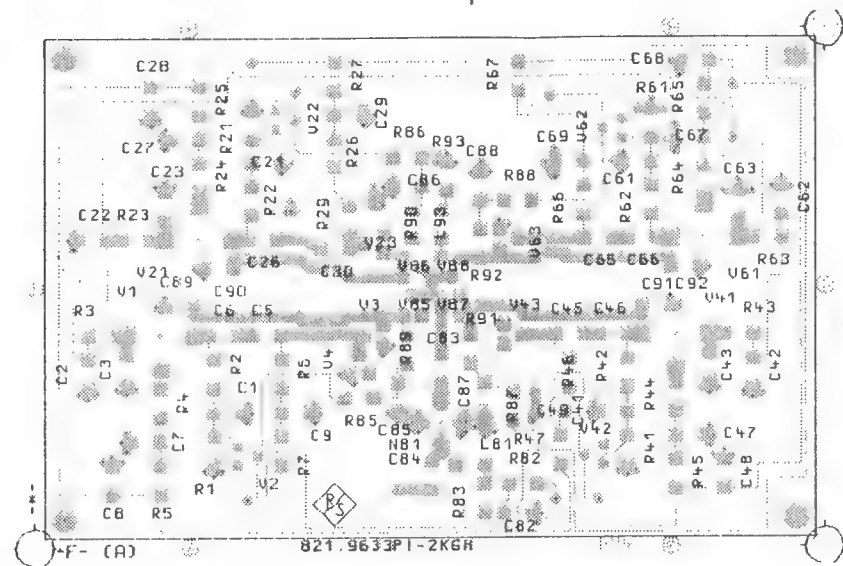


Ansicht und Leitungsführung Lotseite
View of tracks on solder side

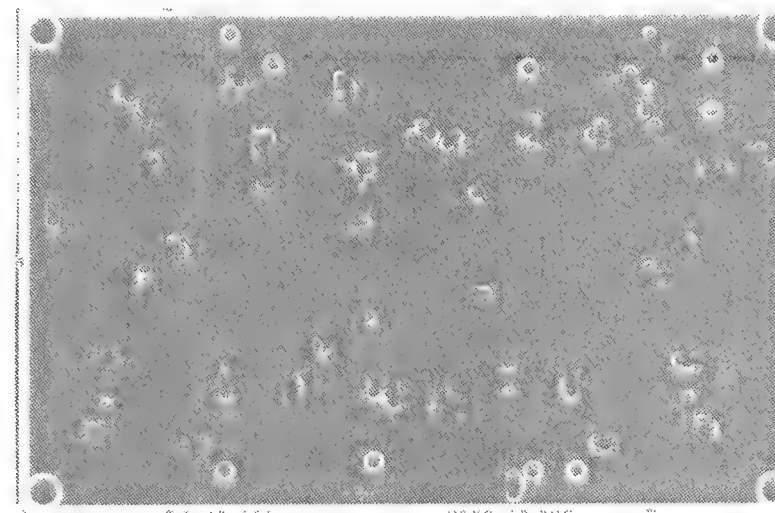
VARIANTENERKLÄRUNG / VERSION
VAR 02 - GRUNDAUSFÜHRUNG / BASIC MODEL

	D		40163	05.88	OS					2KGD	Tag	Name	Benennung	Z	Zeichn.-Nr.	Brutt. Nr.
										Bearb.	05.88	OS	HF - TEIL		821.9010.01	ED
										Gepr.						5
	Änd.	Änderungs	Datum	Name	Änd.	Änderungs	Datum	Name	Norm	zu Gerät		EMFT	reg. v.	821.4019 V	erste Z.	
		Mitteilung				Mitteilung										


Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



Ansicht und Leitungsführung Lötseite
View of tracks on solder side



VARIANTENERKLÄRUNG / VERSION
VAR 02 - GRUNDAUSFÜHRUNG / BASIC MODEL

A	39285	09.87	PI	Maße ohne Toleranzangabe		Maßstab 1 : 1			
						Halbzeug, Werkstoff			
				2KGD	Tag	Name	Benennung		
				Bearb	09.87	PI	1.OSZILLATOR		
				Gepr					
				Norm					
				 ROHDE & SCHWARZ			Zeichn.-Nr		Blatt-Nr
							821.9627.01		2
And Zust	Anderungs-Mitteilung	Tag	Name	zu Gerät EMFT			reg. i V	821.4019V	erste Z
									Bl

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthaltene in contained in
B344	EQ 4,000MHZ CL30P HC-43/U CRYSTAL	EQ 089.2150	QUARZKERAM N. R&S	SACHNUMMER	
B451	EQ 15,000MHZ CL30PF HC43U QUARTZ CRYSTAL UNIT NUR VAR/ONLY MOD: 20	EQ 091.8316	KRISTALLVE N. R&S	SACHNUMMER	
B451	EQ 14,814815MHZ CL30HC43U QUARTZ CRYSTAL UNIT NUR VAR/ONLY MOD: 30	091.8368	KRISTALLVE N. R&S	SACHNUMMER	
B600	EQ 38,900MHZ (3.) HC-25/U CRYSTAL 38,9MHZ NUR VAR/ONLY MOD: 20	EQ 089.4498	QUARZKERAM N. R&S	SACHNUMMER	
B600	EQ 45,750MHZ (3.) HC-25/U CRYSTAL 45,750MHZ NUR VAR/ONLY MOD: 30	EQ 089.4475	QUARZKERAM N. R&S	SACHNUMMER	
C1	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C2	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C3	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C5	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C6	CC 33PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 099.8780	VITRAMON	VJ1206 A33OF FAT	821.9627.01
C7	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C8	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C9	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C21	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C22	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C23	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C26	CC 8,2PF+-0,25PF50V NPO CERAMIC CHIP CAPACITOR	CC 007.8242	VITRAMON	VJ1206 A 8R2 C FAT	821.9627.01
C27	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C28	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C29	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C30	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C41	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C42	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C43	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C45	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C46	CC 1,8PF+-0,25PF50V NPO CERAMIC CHIP CAPACITOR	CC 007.8165	VITRAMON	VJ1206 A 1R8 C FAT	821.9627.01
C47	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C48	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C49	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C61	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C62	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C63	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C65	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C66	CC 1PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR	CC 099.8667	VITRAMON	VJ1206 A 1R0 C FAT	821.9627.01
C67	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
C68	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01
<div> <div>ROHDE & SCHWARZ</div> <div> <div>Äl</div> <div>Datum</div> <div>Date</div> </div> </div>		Schaltteilliste für Parts list for		Sachnummer Stock Nr.	Blatt Page
		26 0489		ED HF-TEIL	821.9010.01 SA 1+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
C69	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01	
C82	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	821.9627.01	
..92	CERAMIC CHIP CAPACITOR					
C101	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
..106	CERAMIC CAPACITOR					
C108	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C110	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C112	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
..114	CERAMIC CAPACITOR					
C116	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C117	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C118	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C119	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C120	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C121	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C122	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C123	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C124	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C125	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C127	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C129	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
..131	CERAMIC CAPACITOR					
C132	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D		
C133	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C141	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C142	CE 47UF-10+50% 40V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7142	ROEDERST	EK 00 CB 247 G		
C151	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C152	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D		
C153	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D		
C154	CC 1,8PF+-0,25PF50V NPO CERAMIC CHIP CAPACITOR	CC 007.8165	VITRAMON	VJ1206 A 1R8 C FAT		
C155	CC 6,2PFO,25PF50V NPO1206 CERAMIC CHIP CAPACITOR	CC 099.8709	VITRAMON	VJ1206 A 6R2 C FAT		
C156	CC 1,8PF+-0,25PF50V NPO CERAMIC CHIP CAPACITOR	CC 007.8165	VITRAMON	VJ1206 A 1R8 C FAT		
C158	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C159	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C161	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C162	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C163	CC 3,9PF+-0,25PF50V NPO CERAMIC CHIP CAPACITOR	CC 007.8207	VITRAMON	VJ1206 A 3R9 C FAT		
C164	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C165	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C166	CC 1PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR	CC 099.8667	VITRAMON	VJ1206 A 1R0 C FAT		
C167	CC 6,2PFO,25PF50V NPO1206 CERAMIC CHIP CAPACITOR	CC 099.8709	VITRAMON	VJ1206 A 6R2 C FAT		
C168	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C170	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für	Sachnummer	Blatt
			Date	Parts list for	Stock Nr.	Page
		26	0489	ED HF-TEIL	821.9010.01 SA	2+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
C171	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C172	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C173	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C174	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C175	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C176	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C177	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C178	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C179	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C180	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C182	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C183	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C184	CC 6,8PF+-0,25PF50V NPO CERAMIC CHIP CAPACITOR	CC 007.8236	VITRAMON	VJ1206 A 6R8 C FAT		
C185	CC 6,2PF0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR	CC 099.8709	VITRAMON	VJ1206 A 6R2 C FAT		
C186	CC 8,2PF+-0,25PF50V NPO CERAMIC CHIP CAPACITOR	CC 007.8242	VITRAMON	VJ1206 A 8R2 C FAT		
C187	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C188	CC 6,8PF+-0,25PF50V NPO CERAMIC CHIP CAPACITOR	CC 007.8236	VITRAMON	VJ1206 A 6R8 C FAT		
C191	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C192	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C193	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C194	CC 5,6PF+-0,25PF3X4NPO CAPACITOR	CC 087.6393	VALVO	2222 678 09568		
C195	CC 2,2PF+-0,25PF3X4NPO CAPACITOR	CC 087.6341	VALVO	2222 678 09228		
C196	CC 3,3PF+-0,25PF3X4NPO CAPACITOR	CC 087.6364	VALVO	2222 678 09338		
C197	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C198	CC 6,8PF+-0,25PF3X4NPO CAPACITOR	CC 087.6406	VALVO	2222 678 09688		
C199	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C200	CC 2,2PF+-0,25PF3X4NPO CAPACITOR	CC 087.6341	VALVO	2222 678 09228		
C201	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C203	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C204	CC 6,8PF+-0,25PF3X4NPO CAPACITOR	CC 087.6406	VALVO	2222 678 09688		
C205	CC 4,7PF+-0,25PF3X4NPO CAPACITOR	CC 087.6387	VALVO	2222 678 09478		
C206	CC 3,3PF+-0,25PF3X4NPO CAPACITOR	CC 087.6364	VALVO	2222 678 09338		
C207	CC 4,7PF+-0,25PF3X4NPO CAPACITOR	CC 087.6387	VALVO	2222 678 09478		
C208	CC 6,8PF+-0,25PF3X4NPO CAPACITOR	CC 087.6406	VALVO	2222 678 09688		
C209	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C213	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C214	CC 12PF+-2%3X4NPO CAPACITOR	CC 087.6435	VALVO	2222 678 10129		
C215	CC 8,2PF+-0,25PF3X4NPO CAPACITOR	CC 087.6412	VALVO	2222 678 09828		
C216	CC 6,8PF+-0,25PF3X4NPO CAPACITOR	CC 087.6406	VALVO	2222 678 09688		
ROHDE & SCHWARZ		Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		26	0489	ED HF-TEIL	821.9010.01 SA	3+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
C217	CC 8,2PF+-0,25PF3X4NPO CAPACITOR	CC 087.6412	VALVO	2222 678 09828		
C218	CC 10PF+-0,25PF3X4NPO CAPACITOR	CC 087.6429	VALVO	2222 678 09109		
C219	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C221	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C222	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C223	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C224	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229		
C225	CC 18PF+-2%3X4NPO CAPACITOR	CC 087.6458	VALVO	2222 678 10189		
C226	CC 15PF+-2%3X4NPO CAPACITOR	CC 087.6441	VALVO	2222 678 10159		
C227	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229		
C228	CC 27PF+-2%4X5NPO CAPACITOR	CC 087.6470	VALVO	2222 678 10279		
C229	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C230	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
..233 C234	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C235	CC 39PF+-2%4X5NPO CAPACITOR	CC 087.6493	VALVO	2222 678 10399		
C236	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229		
C237	CC 33PF+-2%4X5NPO CAPACITOR	CC 087.6487	VALVO	2222 678 10339		
C238	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C239	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C240	CC 27PF+-2%4X5NPO CAPACITOR	CC 087.6470	VALVO	2222 678 10279		
C241	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229 .		
C242	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C243	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C244	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C245	CC 2,2PF+-0,25PF3X4NPO CAPACITOR	CC 087.6341	VALVO	2222 678 09228		
C246	CC 39PF+-2%4X5NPO CAPACITOR	CC 087.6493	VALVO	2222 678 10399		
C247	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229		
C248	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C249	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C250	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C251	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C252	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C253	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C254	CC 2,7PF-0,25PF50V NPO CERAMIC CHIP CAPACITOR	CC 007.8188	VITRAMON	VJ1206 A 2R7 C FAT		
C255	CC 1PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR	CC 099.8667	VITRAMON	VJ1206 A 1R0 C FAT		
C256	CC 1,8PF+-0,25PF50V NPO CERAMIC CHIP CAPACITOR	CC 007.8165	VITRAMON	VJ1206 A 1R8 C FAT		
C257	CC 1PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR	CC 099.8667	VITRAMON	VJ1206 A 1R0 C FAT		
C258	CC 3,9PF+-0,25PF50V NPO CERAMIC CHIP CAPACITOR	CC 007.8207	VITRAMON	VJ1206 A 3R9 C FAT		
C259	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
ROHDE & SCHWARZ		Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		26	0489	ED HF-TEIL	821.9010.01 SA	4+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
C260	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C261	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C262	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8467	VITRAMON	VJ1206 Y 233 K FAT		
C263	CT 0,35/3,5PF RD3,6XL14,3 AIR-TYPE TRIMMER	CT 037.9553	TEKELEC	AT5802MIT MUTTER 488		
C264	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C265	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C266	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C267	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C268	CC 3,9PF+-0,25PF50V NPO CERAMIC CHIP CAPACITOR	CC 007.8207	VITRAMON	VJ1206 A 3R9 C FAT		
C269	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C271	CT 0,35/3,5PF RD3,6XL14,3 AIR-TYPE TRIMMER	CT 037.9553	TEKELEC	AT5802MIT MUTTER 488		
C272	MZ KONDENSATORPLATTE	821.9156	TEKELEC	AT5802MIT MUTTER 488		
C273	MZ KONDENSATORPLATTE	821.9156				
C274	CT 0,35/3,5PF RD3,6XL14,3 AIR-TYPE TRIMMER	CT 037.9553				
C276	MZ KONDENSATORPLATTE	821.9156	TEKELEC	AT5802MIT MUTTER 488		
C277	MZ KONDENSATORPLATTE	821.9156				
C279	CT 0,35/3,5PF RD3,6XL14,3 AIR-TYPE TRIMMER	CT 037.9553				
C281	CC 22PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 099.8396	VITRAMON	VJ1206A220JFA		
C283	MZ KONDENSATORPLATTE	821.8995	VITRAMON	VJ1206 A 1R0 C FAT		
C285	CC 1PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR	CC 099.8667				
C286	CC 1PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR	CC 099.8667	VITRAMON	VJ1206 A 1R0 C FAT		
C291	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C292	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C294	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C296	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229		
C297	CC 15PF+-2%3X4NPO CAPACITOR	CC 087.6441	VALVO	2222 678 10159		
C300	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D		
C301	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D		
C330	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C331	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C332	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C333	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C334	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D		
C335	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C338	CC 10PF+-0,25PF50VNPO1206 CERAMIC CHIP CAPACITOR	CC 099.8480	VITRAMON	VJ1206 A 100 C FAT		
C341	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C342	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C343	CC 10PF+-0,25PF3X4NPO CAPACITOR	CC 087.6429	VALVO	2222 678 09109		
C344	CC 56PF+-2%5X6NPO CAPACITOR	CC 087.6512	VALVO	2222 678 10569		
C345	CT 2,8PF-30PFMAL 0/U 4ST. AIR-TYPE TRIMMER	CT 025.7244	TRONSER	LUFTTR.1011112003000		
C346	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D		
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für		
		26	0489	Parts list for		
		ED HF-TEIL		Sachnummer	Blatt	
				Stock Nr.	Page	
				821.9010.01 SA	5+	

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C347	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C348	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C349	CC 330PF+-10%3X4R2000 CAPACITOR	CC 087.6970	VALVO	2222 63051 331	
C350	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	
C351	CC 680PF+-10%4X5R2000 CAPACITOR	CC 087.7019	VALVO	2222 63051 681	
C352	CC 220PF+-10%63V3X5D2000 CAPACITOR	CC 099.5616	VALVO	2222 63051 221	
C353	CE 47UF-10+50% 40V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7142	ROEDERST	EK 00 CB 247 G	
C356	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%	
C357	CC 47NF+-10%50V5K1200VIEL CAPACITOR	CC 082.7810	UNION CARB	CK05BX473K	
C359	CK 470NF+-5%63V5RM MKT CAPACITOR	CK 099.2975	WIMA	MKS2/63/0,47UF/5%	
C379	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C380	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C381	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C382	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C383	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C387	CC 33PF+-2%4X5NPO CAPACITOR	CC 087.6487	VALVO	2222 678 10339	
C389	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C391	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C397	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C398	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C401	CC 15PF+-2%3X4NPO CAPACITOR	CC 087.6441	VALVO	2222 678 10159	
C401	NUR VAR/ONLY MOD: 20 CC 3,3PF+-0,25PF3X4NPO CAPACITOR	CC 087.6364	VALVO	2222 678 09338	
C403	NUR VAR/ONLY MOD: 30 CT 2,8PF-30PFMAL 0/U 4ST. AIR-TYPE TRIMMER	CT 025.7244	TRONSER	LUFTTR.1011112003000	
C404	CC 27PF+-2%4X5NPO CAPACITOR	CC 087.6470	VALVO	2222 678 10279	
C404	NUR VAR/ONLY MOD: 20 CC 15PF+-2%3X4NPO CAPACITOR	CC 087.6441	VALVO	2222 678 10159	
C405	NUR VAR/ONLY MOD: 30 CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C409	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C411	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C412	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C419	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D	
C420	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA	
C421	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C422	CT 3PF LUFTTR.3,6X13F.G.S PISTON TRIMMER	CT 037.7121	TEKELEC	LUFTTRAT5801MMUTTER	
C423	CC 2,7PF-0,25PF50V NPO CERAMIC CHIP CAPACITOR	CC 007.8188	VITRAMON	VJ1206 A 2R7 C FAT	
C424	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C426	CC 8,2PF+-0,25PF3X4N750 CAPACITOR	CC 087.6770	VALVO	2222 678 57828	
C427	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D	
ROHDE & SCHWARZ		Äl Datum	Schaltteilliste für Parts list for		Blatt
		26 0489	ED HF-TEIL		Page
			Sachnummer Stock Nr.		6+
			821.9010.01 SA		

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
C428	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C429	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438	VITRAMON	VJ1206Y102KFA		
C432	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C433	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C434	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D		
C435	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C436	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C437	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C438	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C439	CC 68PF+-2%6X7NPO CAPACITOR	CC 087.6529	VALVO	2222 678 10689		
C450	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C451	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C452	CC 15PF+-2%3X4NPO CAPACITOR	CC 087.6441	VALVO	2222 678 10159		
C452	NUR VAR/ONLY MOD: 20 CC 27PF+-2%4X5NPO CAPACITOR	CC 087.6470	VALVO	2222 678 10279		
C454	NUR VAR/ONLY MOD: 30 CT 9,3PF NORMAL 0/U 4ST AIR-TYPE TRIMMER	CT 025.7215	TRONSER	10 1111 20011		
C455	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D		
C457	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C458	CT 2,8PF-30PFMAL 0/U 4ST. AIR-TYPE TRIMMER	CT 025.7244	TRONSER	LUFTTR.1011112003000		
C459	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C461	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C462	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C463	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C464	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D		
C471	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C473	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C474	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C476	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C478	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C481	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C500	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C501	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C502	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C504	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C505	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C510	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C511	NUR VAR/ONLY MOD: 20 CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C512	NUR VAR/ONLY MOD: 20 CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
ROHDE & SCHWARZ		Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		26	0489	ED HF-TEIL	821.9010.01 SA	7+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C513	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR NUR VAR/ONLY MOD: 20	CC 022.0784	VALVO	2222 63051 102	
C521	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR NUR VAR/ONLY MOD: 20	CC 022.0784	VALVO	2222 63051 102	
C522	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR NUR VAR/ONLY MOD: 20	CC 022.0784	VALVO	2222 63051 102	
C524	CC 3,3PF+-0,25PF3X4NPO CAPACITOR NUR VAR/ONLY MOD: 20	CC 087.6364	VALVO	2222 678 09338	
C526	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR NUR VAR/ONLY MOD: 20	CC 022.0784	VALVO	2222 63051 102	
C527	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR NUR VAR/ONLY MOD: 20	CC 022.0784	VALVO	2222 63051 102	
C528	CC 33PF+-2%4X5NPO CAPACITOR NUR VAR/ONLY MOD: 20	CC 087.6487	VALVO	2222 678 10339	
C530	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR NUR VAR/ONLY MOD: 20	CC 022.0784	VALVO	2222 63051 102	
C531	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C532	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR NUR VAR/ONLY MOD: 20	CC 022.0784	VALVO	2222 63051 102	
C535	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR NUR VAR/ONLY MOD: 20	CC 022.0784	VALVO	2222 63051 102	
C536	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR NUR VAR/ONLY MOD: 20	CC 022.0784	VALVO	2222 63051 102	
C537	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR NUR VAR/ONLY MOD: 20	CC 099.8521	VITRAMON	VJ1206 Y 103 K FAT	
C600	CC 10PF+-0,25PF3X4NPO CAPACITOR	CC 087.6429	VALVO	2222 678 09109	
C601	CT 9,3PF NORMAL O/U 4ST AIR-TYPE TRIMMER	CT 025.7215	TRONSER	10 1111 20011	
C602	CC 10PF+-0,25PF3X4NPO CAPACITOR NUR VAR/ONLY MOD: 20	CC 087.6429	VALVO	2222 678 09109	
C603	CC 15PF+-2%3X4NPO CAPACITOR	CC 087.6441	VALVO	2222 678 10159	
C604	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
609	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D	
C620	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C621	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C622	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C628	CC 47PF+-2%5X6NPO CAPACITOR	CC 087.6506	VALVO	2222 678 10479	
C629	CC 47PF+-2%5X6NPO CAPACITOR	CC 087.6506	VALVO	2222 678 10479	
C630	CK 1UF+-10%50V5RM CAPACITOR	CK 099.2998	WIMA	MKS2/50/1UF/10%	
C631	CK 1UF+-10%50V5RM CAPACITOR	CK 099.2998	WIMA	MKS2/50/1UF/10%	
C660	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C661	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C745	CC 39PF+-2%4X5NPO CAPACITOR	CC 087.6493	VALVO	2222 678 10399	
CX283	MZ KONDENSATORPLATTE	821.9156			
D261	BM TFM15-830 MIXER 2.OGHZ MIXER	BM 568.2849	MCL	TFM15-830	
D295	BM TFM15-830 MIXER 2.OGHZ MIXER	BM 568.2849	MCL	TFM15-830	
D345	BL SP5051 FREQ.SYNTH SYNTHESIZER	824.1440	PLESSEY	SP5051	

ROHDE & SCHWARZ	Äl	Datum	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	26	0489			
			ED HF-TEIL	821.9010.01 SA	8+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in				
D435	BL SP4731DP 64:1 DIVID DIVIDER	821.9204	PLESSEY	SP4731DP					
D520	EP 38,9 MHZ SAW-BANDP B/G 38,9MHZ-SAW-FILTER B/G NUR VAR/ONLY MOD: 20	821.9191	SIEMENS	N.R&S-ZCHNG.821.9191					
D620	BL MC12040L PLL-PHASE-DET PHASE FREQUENCY DETECTOR	BL 302.5877	MOTOROLA	MC12040L					
D630	BJ TL604CP 2X ANALOGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP					
D631	BJ TL604CP 2X ANALOGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP					
L81	LD 100NH10%OR15 0,1A 1206 SMD-MULTILAYER-INDUCTOR	LD 007.4818	TOKO	MLF 3216 D R1 K	821.9627.01				
L93	LD 100NH10%OR15 0,1A 1206 SMD-MULTILAYER-INDUCTOR	LD 007.4818	TOKO	MLF 3216 D R1 K	821.9627.01				
L101	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20					
L102	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20					
..106	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20					
L108	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20					
L110	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20					
L112	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20					
L113	LD 3,3UH 2% 1,35A OR14 CHOKE	LD 567.3964	JAHRE	74.11-3R30G					
L114	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20					
L116	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20					
..125	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20					
L127	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20					
L129	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20					
L130	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20					
L131	LD 3,3UH 2% 1,35A OR14 CHOKE	LD 567.3964	JAHRE	74.11-3R30G					
L133	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20					
L141	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20					
L151	LD 3,3UH 2% 1,35A OR14 CHOKE	LD 567.3964	JAHRE	74.11-3R30G					
L159	LL SPULE 0,5 WDG	*821.9127							
L161	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44	821.9179				
L162	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44					
L163	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44					
L168	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44					
L181	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44					
L183	LL SPULE 0,5 WDG	821.9033			821.9179				
L185	LL SPULE 0,5 WDG	821.9033			821.9179				
L187	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44	821.9179				
L191	LD 100 UH10%8,000HMO,084A CHOKE	LD 067.3101	DELEVAN	DROSSEL 1025-68					
L193	LL SPULE 1,5 WDG M.ANZAPF	821.9056			821.9179				
L195	LL SPULE 2,5 WDG	821.8872			821.9179				
L197	LL SPULE 1,5 WDG M.ANZAPF	821.9056			821.9179				
L199	LD 100 UH10%8,000HMO,084A CHOKE	LD 067.3101	DELEVAN	DROSSEL 1025-68					
L203	LL SPULE 1,5 WDG M.ANZAPF	821.9056			821.9179				
L205	LL SPULE 2,5 WDG	821.9062			821.9179				
L207	LL SPULE 1,5 WDG M.ANZAPF	821.9056			821.9179				
L213	LL SPULE 1,5 WDG M.ANZAPF	821.9056			821.9179				
L215	LL SPULE 2,5 WDG	821.9062			821.9179				
L217	LL SPULE 1,5 WDG M.ANZAPF	821.9056			821.9179				
L221	LD 100 UH10%8,000HMO,084A CHOKE	LD 067.3101	DELEVAN	DROSSEL 1025-68	821.9179				
L223	LL SPULE 1,5 WDG M.ANZAPF	821.9056			821.9179				
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für		Sachnummer		Blatt	
			Date	Parts list for		Stock Nr.		Page	
		26	0489	ED HF-TEIL		821.9010.01 SA		9+	

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
L225	LL SPULE 1,5 WDG	821.9040			821.9179	
L227	LL SPULE 1,5 WDG M.ANZAPF	821.9056			821.9179	
L229	LD 100 UH10%8,000HMO,084A CHOKE	LD 067.3101	DELEVAN	DROSSEL 1025-68		
L233	LL SPULE 2,5 WDG	821.9062			821.9179	
L234	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 067.2740	DELEVAN	DROSSEL 1025-94		
L235	LL SPULE 3,5 WDG.	821.9140			821.9179	
L237	LL SPULE 2,5 WDG	821.9062			821.9179	
L240	LD SPULE 60NH 2,5W FE-K COIL	816.9045	COMPONEX	E526HNA-100072		
L245	LD SPULE 60NH 2,5W FE-K COIL	816.9045	COMPONEX	E526HNA-100072		
L247	LD SPULE 130NH 3,5W FE-K COIL	817.0041	TOKO	E 526 HN-100104		
L251	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44		
L253	LL SPULE 1,5 WDG M.ANZAPF	821.9056			821.9179	
L255	LL SPULE 1,5 WDG	821.9040			821.9179	
L257	LL SPULE 1,5 WDG M.ANZAPF	821.9056			821.9179	
L259	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44		
L260	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44		
L261	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44		
L262	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20		
L264	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 067.2740	DELEVAN	DROSSEL 1025-94		
L265	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 067.2740	DELEVAN	DROSSEL 1025-94		
L266	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20		
L268	LL SPULE 2,5WDG.M.ANZAPF.	821.8989			821.9179	
L271	LL SPULE FILTER LINKS	821.9091			821.9179	
L273	LL SPULE FILTER MITTE	821.9104			821.9179	
L279	LL SPULE FILTER RECHTS	821.9110			821.9179	
L281	LL SPULE 0,5 WDG HOCH	821.9079			821.9179	
L292	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 067.2740	DELEVAN	DROSSEL 1025-94		
L296	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 067.2740	DELEVAN	DROSSEL 1025-94		
L331	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 067.2740	DELEVAN	DROSSEL 1025-94		
L332	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 067.2740	DELEVAN	DROSSEL 1025-94		
L333	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20		
L335	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 067.2740	DELEVAN	DROSSEL 1025-94		
L346	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44		
L347	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20		
L352	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44		
L379	LD 2,20UH10%0,400HMO,415A CHOKE	LD 067.2905	DELEVAN	DROSSEL 1025-28		
L381	LD 2,20UH10%0,400HMO,415A CHOKE	LD 067.2905	DELEVAN	DROSSEL 1025-28		
L401	LD SPULE 330NH 9,5W FE-K COIL	817.0035	TOKO	E 526 HNA-100079		
L402	LD SPULE 330NH 9,5W FE-K COIL	817.0035	TOKO	E 526 HNA-100079		
L431	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 067.2740	DELEVAN	DROSSEL 1025-94		
L432	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 067.2740	DELEVAN	DROSSEL 1025-94		
L433	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 067.2740	DELEVAN	DROSSEL 1025-94		
L437	LD 0,47UH10%0,350HMO,660A CHOKE	LD 067.2828	DELEVAN	DROSSEL 1025-12		
L451	LD 4,70UH10%1,200HMO,239A CHOKE	LD 067.2940	DELEVAN	DROSSEL 1025-36		
L458	LD 2,20UH10%0,400HMO,415A CHOKE	LD 067.2905	DELEVAN	DROSSEL 1025-28		
L474	LD 33,0UH10%3,400HMO,130A CHOKE	LD 067.3047	DELEVAN	DROSSEL 1025-56		
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für	Sachnummer	Blatt
		Date		Parts list for	Stock Nr.	Page
		26	0489	ED HF-TEIL	821.9010.01 SA	10+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
L476	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44	821.9627.01	
L500	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44		
L503	NUR VAR/ONLY MOD: 20 LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44		
L510	NUR VAR/ONLY MOD: 20 LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44		
L523	NUR VAR/ONLY MOD: 20 LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20		
L535	NUR VAR/ONLY MOD: 20 LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44		
L537	NUR VAR/ONLY MOD: 20 LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44		
L600	NUR VAR/ONLY MOD: 20 LD 0,68UH10%0,600HMO,500A CHOKE	LD 067.2840	DELEVAN	DROSSEL 1025-16		
L601	NUR VAR/ONLY MOD: 20 LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20		
N81	BM MSA-0335-21 BB.AMPL BROADBAND AMPLIFIER	670.7116	AVANTEK	MSA-0335-21		
N261	BM CGY21 GAAS BB.AMPL BROADBAND AMPLIFIER	821.9940	SIEMENS	CGY21		
N265	BM CGY40 GAAS BB.AMPL BROADBAND AMPLIFIER	821.9004	SIEMENS	CGY40		
N292	BM MSA0435 BB.AMPL BROADBAND AMPLIFIER	397.4567	AVANTEK	MSA0435		
N330	BM MSA0404 BB.AMPL BROADBAND AMPLIFIER	822.0075	AVANTEK	MSA0404		
N331	BM MSA0404 BB.AMPL BROADBAND AMPLIFIER	822.0075	AVANTEK	MSA0404		
N333	BM CGY40 GAAS BB.AMPL BROADBAND AMPLIFIER	821.9004	SIEMENS	CGY40		
N420	BM MSA0404 BB.AMPL BROADBAND AMPLIFIER	822.0075	AVANTEK	MSA0404		
N431	BM OM361A ANTENNENVERST ANTENNA AMPLIFIER	BM 334.5314	VALVO	OM361A		
N513	BM MWA130 BB.AMPL BROADBAND AMPLIFIER	670.7251	MOTOROLA	MWA130		
N521	NUR VAR/ONLY MOD: 20 BM OM345 ANTENNENVERST ANTENNA AMPLIFIER	BM 285.1596	VALVO	OM345		
N630	NUR VAR/ONLY MOD: 20 BO TLO74IN 4XFET OPAMP OPERATIONAL AMPLIFIER	568.7528	TEXAS INST	TLO74IN		
0193	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
0197	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
0203	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
0207	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
0213	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
0217	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
0223	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
0227	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
0253	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
0257	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
0268	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
0270	1X 1-POLIG FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
ROHDE & SCHWARZ		Äi	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		26	0489	ED HF-TEIL	821.9010.01 SA	11+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
O280	1X 1-POLIG FP INDIREKT.STECKERL.36P. PIN CONNECTOR 1X 1-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36		
P411	VL WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
P435	WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
P466	VL WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
P620	WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
P621	VL WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
P630	WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
P631	VL WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
P640	WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001		
R1	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R2	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R3	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5520	DALE	CRCW1206-10 33R2 F-T	821.9627.01	
R4	RG 1000 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.7271	DALE	CRCW1206-10 1K F-T	821.9627.01	
R5	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5520	DALE	CRCW1206-10 33R2 F-T	821.9627.01	
R6	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R7	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R21	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R22	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R23	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5520	DALE	CRCW1206-10 33R2 F-T	821.9627.01	
R24	RG 1000 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.7271	DALE	CRCW1206-10 1K F-T	821.9627.01	
R25	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5520	DALE	CRCW1206-10 33R2 F-T	821.9627.01	
R26	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM	RG 007.5108	DALE	CRCW1206-10 0R F-T	821.9627.01	
R27	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R29	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R41	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R42	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R43	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5520	DALE	CRCW1206-10 33R2 F-T	821.9627.01	
R44	RG 1000 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.7271	DALE	CRCW1206-10 1K F-T	821.9627.01	
R45	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5520	DALE	CRCW1206-10 33R2 F-T	821.9627.01	
R46	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R47	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R61	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R62	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R63	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5520	DALE	CRCW1206-10 33R2 F-T	821.9627.01	
R64	RG 1000 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.7271	DALE	CRCW1206-10 1K F-T	821.9627.01	
R65	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5520	DALE	CRCW1206-10 33R2 F-T	821.9627.01	
R66	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
ROHDE & SCHWARZ		Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		26	0489	ED HF-TEIL	821.9010.01 SA	12+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
R67	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793	DALE	CRCW1206-10 10K F-T	821.9627.01	
R82	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5520	DALE	CRCW1206-10 33R2 F-T	821.9627.01	
R83	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5589	DALE	CRCW1206-10 150R F-T	821.9627.01	
R85	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5520	DALE	CRCW1206-10 33R2 F-T	821.9627.01	
R86	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5520	DALE	CRCW1206-10 33R2 F-T	821.9627.01	
R87	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5520	DALE	CRCW1206-10 33R2 F-T	821.9627.01	
R88	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5520	DALE	CRCW1206-10 33R2 F-T	821.9627.01	
R89	RG 1000 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.7271	DALE	CRCW1206-10 1K F-T	821.9627.01	
R90	RG 1000 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.7271	DALE	CRCW1206-10 1K F-T	821.9627.01	
R91	RG 1000 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.7271	DALE	CRCW1206-10 1K F-T	821.9627.01	
R92	RG 1000 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.7271	DALE	CRCW1206-10 1K F-T	821.9627.01	
R93	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.8884	DALE	CRCW1206-10 100R F-T	821.9627.01	
R161	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,5OHM-F-D		
R162	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,5OHM-F-D		
R163	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/332OHM-F-D		
R164	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/332OHM-F-D		
R168	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/332OHM-F-D		
R169	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D		
R170	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.8849	DALE	CRCW1206-10 68R1 F-T		
R171	RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5489	DALE	CRW1206-10 22R1 F-T		
R172	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.8861	DALE	CRCW1206-10 82R5 F-T		
R173	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C		
R174	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C		
R175	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.8884	DALE	CRCW1206-10 100R F-T		
R176	RG 39,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5543	DALE	CRCW1206-10 39R2 F-T		
R177	RG 39,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5543	DALE	CRCW1206-10 39R2 F-T		
R178	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C		
R179	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C		
R181	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C		
R183	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D		
R184	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,5OHM-F-D		
R187	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,5OHM-F-D		
R188	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D		
R189	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C		
R193	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D		
R194	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,5OHM-F-D		
R197	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,5OHM-F-D		
R198	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D		
R203	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D		
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für	Sachnummer	Blatt
		Date		Parts list for	Stock Nr.	Page
		26	0489	ED HF-TEIL	821.9010.01 SA	13+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R204	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D	
R208	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R209	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D	
R211	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R212	RL 0,35W 1,50KOHM+-1%TK50 RESISTOR	RL 083.0732	DRALORIC	SMA0207/1,50K-F-D	
R213	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R214	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D	
R218	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R219	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D	
R223	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R224	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D	
R226	RL 0,35W 1,50KOHM+-1%TK50 RESISTOR	RL 083.0732	DRALORIC	SMA0207/1,50K-F-D	
R227	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R228	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R229	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D	
R233	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R234	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D	
R238	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R239	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D	
R243	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R244	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D	
R248	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R249	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D	
R251	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R253	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R254	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D	
R257	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D	
R258	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R259	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R268	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5637	DALE	CRCW1206-10 274R F-T	
R269	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5466	DALE	CRW1206-10 18R2 F-T	
R270	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5637	DALE	CRCW1206-10 274R F-T	
R281	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5650	DALE	CRCW1206-10 332R F-T	
R282	RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5489	DALE	CRW1206-10 22R1 F-T	
R283	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5650	DALE	CRCW1206-10 332R F-T	
R291	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,20HM-F-D	
R292	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R296	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D	
R300	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	26	0489	ED HF-TEIL	821.9010.01 SA	14+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
R301	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/4750HM-F-D		
R302	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R329	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,20HM-F-D		
R330	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/1500HM-F-D		
R331	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,20HM-F-D		
R332	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/1500HM-F-D		
R334	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5650	DALE	CRCW1206-10 332R F-T		
R335	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5466	DALE	CRW1206-10 18R2 F-T		
R336	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5650	DALE	CRCW1206-10 332R F-T		
R341	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.8884	DALE	CRCW1206-10 100R F-T		
R347	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R352	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D		
R353	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R354	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R355	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R356	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R357	RL 0,35W 47,5KOHM+-1%TK50 RESISTOR	RL 083.1800	DRALORIC	SMA/207/47,5K-F-C		
R358	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D		
R361	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D		
R364	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D		
R365	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R375	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,20HM-F-D		
R376	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/1500HM-F-D		
R378	RL 0,35W4,75 OHM+-1%TK50 METALFILMRESISTOR	RL 099.8021	RESISTA	MK2 4,75 OHM 1% TK50		
R379	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D		
R380	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR	RL 082.9636	DRALORIC	SMA0207/68,10HM-F-D		
R381	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R382	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/1500HM-F-D		
R383	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R384	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/1500HM-F-D		
R385	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/100HM-F-D		
R386	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,20HM-F-D		
R387	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR	RL 082.9636	DRALORIC	SMA0207/68,10HM-F-D		
R389	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R394	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R395	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR	RL 082.9636	DRALORIC	SMA0207/68,10HM-F-D		
R395	NUR VAR/ONLY MOD: 20 RL 0,35W 82,5 OHM+-1%TK50 RESISTOR	RL 082.9707	DRALORIC	SMA0207/82,50HM-F-D		
R397	NUR VAR/ONLY MOD: 30 RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
ROHDE & SCHWARZ		Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		26	0489	ED HF-TEIL	821.9010.01 SA	15+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
R398	RS 0,5W100 OHM+-20%KURVE1 DEPOS.-CARBON POTENTIOMET	RS 069.8081	BOURNS	3329H-1-101		
R399	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR	RL 082.9636	DRALORIC	SMA0207/68,10HM-F-D		
R401	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D		
R402	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D		
R402	NUR VAR/ONLY MOD: 20 RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/3320HM-F-D		
R404	NUR VAR/ONLY MOD: 30 RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R405	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,20HM-F-D		
R407	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R408	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/1500HM-F-D		
R409	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,20HM-F-D		
R411	RL 0,35W 56,2 OHM+-1%TK50 RESISTOR	RL 082.9571	DRALORIC	SMA0207/56,20HM-F-D		
R412	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/150HM-F-D		
R413	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D		
R421	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R422	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R423	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R424	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R425	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R428	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R429	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R432	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R445	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R446	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D		
R447	RS 0,5W20KOHM+-20%KURVE1 DEPOS.-CARBON POTENTIOMET	RS 069.8075	BOURNS	3329H-1-203		
R448	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R450	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R451	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R452	RL 0,35W 47,5KOHM+-1%TK50 RESISTOR	RL 083.1800	DRALORIC	SMA/207/47,5K-F-C		
R453	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,20HM-F-D		
R454	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/4750HM-F-D		
R455	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R457	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R458	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R461	RL 0,35W 33,2KOHM+-1%TK50 RESISTOR	RL 083.1674	DRALORIC	SMA0207/33,2K-F-C		
R462	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,20HM-F-D		
R463	RL 0,35W 47,5KOHM+-1%TK50 RESISTOR	RL 083.1800	DRALORIC	SMA/207/47,5K-F-C		
R464	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,20HM-F-D		
R466	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/3320HM-F-D		
ROHDE & SCHWARZ		Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		26	0489	ED HF-TEIL	821.9010.01 SA	16+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
R467	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R468	RL 0,35W 33,2KOHM+-1%TK50 RESISTOR	RL 083.1674	DRALORIC	SMA0207/33,2K-F-C		
R469	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/475OHM-F-D		
R471	RL 0,35W 33,2KOHM+-1%TK50 RESISTOR	RL 083.1674	DRALORIC	SMA0207/33,2K-F-C		
R472	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,2OHM-F-D		
R473	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R475	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R476	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,2OHM-F-D		
R478	RL 0,35W 33,2KOHM+-1%TK50 RESISTOR	RL 083.1674	DRALORIC	SMA0207/33,2K-F-C		
R479	RL 0,35W 47,5KOHM+-1%TK50 RESISTOR	RL 083.1800	DRALORIC	SMA/207/47,5K-F-C		
R481	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R482	RL 0,35W 274 OHM+-1%TK50 RESISTOR	RL 083.0178	DRALORIC	SMA0207/274OHM-F-D		
R483	RL 0,35W 33,2KOHM+-1%TK50 RESISTOR	RL 083.1674	DRALORIC	SMA0207/33,2K-F-C		
R484	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R500	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R501	NUR VAR/ONLY MOD: 20 RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R502	NUR VAR/ONLY MOD: 20 RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,2OHM-F-D		
R503	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R505	NUR VAR/ONLY MOD: 20 RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R506	NUR VAR/ONLY MOD: 20 RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R508	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R510	RL 0,35W 22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMA0207/22,10OHM-F-D		
R511	NUR VAR/ONLY MOD: 20 RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,2OHM-F-D		
R513	NUR VAR/ONLY MOD: 20 RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/150OHM-F-D		
R521	NUR VAR/ONLY MOD: 20 RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,2OHM-F-D		
R522	NUR VAR/ONLY MOD: 20 RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R523	NUR VAR/ONLY MOD: 20 RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R524	NUR VAR/ONLY MOD: 20 RL 0,35W 649 OHM+-1%TK50 RESISTOR	RL 082.2402	DRALORIC	SMA/207/649OHM-F-C		
R525	NUR VAR/ONLY MOD: 20 RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/150OHM-F-D		
R526	NUR VAR/ONLY MOD: 20 RS 0,5W 1KOHM+-20%KURVE1 DEPOS.-CARBON POTENTIOMET	RS 069.8030	BOURNS	3329H-1-102		
R527	NUR VAR/ONLY MOD: 20 RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/150OHM-F-D		
R528	NUR VAR/ONLY MOD: 20 RS 0,5W 500 OHM+-20%KURV1 DEPOS.-CARBON POTENTIOMET	RS 069.8023	BOURNS	3329H-1-501		
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		26	0489	ED HF-TEIL	821.9010.01 SA	17+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
R529	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMAO207/150OHM-F-D		
R530	NUR VAR/ONLY MOD: 20 RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMAO207/22,10HM-F-D		
R531	NUR VAR/ONLY MOD: 20 RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMAO207/2210HM-F-D		
R532	NUR VAR/ONLY MOD: 20 RL 0,35W 56,2 OHM+-1%TK50 RESISTOR	RL 082.9571	DRALORIC	SMAO207/56,20HM-F-D		
R533	NUR VAR/ONLY MOD: 20 RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMAO207/10K-F-D		
R534	NUR VAR/ONLY MOD: 20 RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMAO207/10K-F-D		
R535	NUR VAR/ONLY MOD: 20 RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMAO207/2210HM-F-D		
R536	NUR VAR/ONLY MOD: 20 RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMAO207/33,20HM-F-D		
R537	NUR VAR/ONLY MOD: 20 RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMAO207/2210HM-F-D		
R559	NUR VAR/ONLY MOD: 20 RL 0,35W 56,2 OHM+-1%TK50 RESISTOR	RL 082.9571	DRALORIC	SMAO207/56,20HM-F-D		
R600	RL 0,35W 47,5KOHM+-1%TK50 RESISTOR	RL 083.1800	DRALORIC	SMA/207/47,5K-F-C		
R601	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMAO207/33,20HM-F-D		
R602	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMAO207/100K-F-C		
R603	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMAO207/100/HM-F-D		
R604	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMAO207/475OHM-F-D		
R605	RL 0,35W 47,5KOHM+-1%TK50 RESISTOR	RL 083.1800	DRALORIC	SMA/207/47,5K-F-C		
R606	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMAO207/33,20HM-F-D		
R607	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMAO207/33,20HM-F-D		
R610	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMAO207/1K-F-C		
R611	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMAO207/100K-F-C		
R612	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMAO207/475OHM-F-D		
R613	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMAO207/100/HM-F-D		
R620	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMAO207/100/HM-F-D		
R621	RL 0,35W 274 OHM+-1%TK50 RESISTOR	RL 083.0178	DRALORIC	SMAO207/274OHM-F-D		
R622	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMAO207/3,32K-F-D		
R623	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMAO207/3,32K-F-D		
R625	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMAO207/1K-F-C		
R626	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMAO207/475OHM-F-D		
R627	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMAO207/475OHM-F-D		
R628 ..631	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA O207/2,21K-F-C		
R632	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMAO207/10K-F-D		
R633	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMAO207/100K-F-C		
R634	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMAO207/10K-F-D		
R635	RL 0,35W 15,0KOHM+-1%TK50 RESISTOR	RL 083.1400	DRALORIC	SMAO207/15K-F-D		
ROHDE & SCHWARZ		Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		26	0489	ED HF-TEIL	821.9010.01 SA	18+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R636	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R637	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R641	RS 0,5W100KOHM+-20%KURVE 1 DEPOS.-CARBON POTENTIOMET	RS 069.0468	BOURNS	3329H-1-104	
R643	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R644	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R645	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R646	RL 0,35W2,21MOHM+-1%TK50 METALFILMRESISTOR	RL 099.8173	RESISTA	MK2 2,21MOHM 1% TK50	
R647	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R648	RL 0,35W 22,1KOHM+-1%TK50 RESISTOR	RL 083.1545	DRALORIC	SMA/207/22,1K-F-C	
R650	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R651	RL 0,35W 150 KOHM+-1%TK50 RESISTOR	RL 083.2129	DRALORIC	SMA/207/150K-F-C	
R652	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R653	RS 0,5W 5KOHM+-20%KURVE 1 DEPOS.-CARBON POTENTIOMET	RS 069.8052	BOURNS	3329H-1-502	
R654	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R655	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R656	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R660	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R661	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R662	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R663	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R664	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/475OHM-F-D	
R665	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,2OHM-F-D	
V1	AK BFR96 N 15V 75MA TRANSISTOR	AK 093.2738	VALVO	BFR96	821.9627.01
V2	AD BAS16 75V OA25 UDI DIODE	AD 007.4924	VALVO	BAS16	821.9627.01
V3	AE BBY31 11/02PF CDI TUNNING DIODE	AE 007.3128	VALVO	BBY31	821.9627.01
V4	AE BBY31 11/02PF CDI TUNNING DIODE	AE 007.3128	VALVO	BBY31	821.9627.01
V21	AK BFR96 N 15V 75MA TRANSISTOR	AK 093.2738	VALVO	BFR96	821.9627.01
V22	AD BAS16 75V OA25 UDI DIODE	AD 007.4924	VALVO	BAS16	821.9627.01
V23	AE BBY31 11/02PF CDI TUNNING DIODE	AE 007.3128	VALVO	BBY31	821.9627.01
V41	AK BFR96 N 15V 75MA TRANSISTOR	AK 093.2738	VALVO	BFR96	821.9627.01
V42	AD BAS16 75V OA25 UDI DIODE	AD 007.4924	VALVO	BAS16	821.9627.01
V43	AE BBY31 11/02PF CDI TUNNING DIODE	AE 007.3128	VALVO	BBY31	821.9627.01
V61	AK BFR96 N 15V 75MA TRANSISTOR	AK 093.2738	VALVO	BFR96	821.9627.01
V62	AD BAS16 75V OA25 UDI DIODE	AD 007.4924	VALVO	BAS16	821.9627.01
V63	AE BBY31 11/02PF CDI TUNNING DIODE	AE 007.3128	VALVO	BBY31	821.9627.01
V85	AE BA885 CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885	821.9627.01
V161	AE BA885 CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885	
V162	AE BA682 BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682	
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für	
			Date	Parts list for	
		26	0489	ED HF-TEIL	
				Sachnummer Stock Nr.	Blatt Page
				821.9010.01 SA	19+

Kennz. Comp.No.	Benennung Designation		Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
V163	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682	F	
V164	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V168	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V169	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V171	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V172	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V173	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V173	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V174	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V175	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V181	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V182	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V183	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V184	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V186	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V187	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V188	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V189	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V192	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V194	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V195	AD 1N4448	75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V196	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V198	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V203	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V204	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V205	AD 1N4448	75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V206	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V208	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V212	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V213	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V214	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V215	AD 1N4448	75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V216	AE BA885	CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885		
V218	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V219	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V223	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V224	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V226	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
V228	AE BA682	BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682		
ROHDE & SCHWARZ		Äl	Schaltteilliste für		Sachnummer	Blatt	
		Datum Date	Parts list for		Stock Nr.		Page
		26	0489	ED HF-TEIL		821.9010.01 SA	20+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in		
V233	AE BA682 BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682			
V234	AE BA682 BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682			
V236	AE BA682 BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682			
V238	AE BA682 BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682			
V243	AE BA682 BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682			
V244	AE BA682 BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682			
V246	AE BA682 BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682			
V248	AE BA682 BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682			
V251	AE BA885 CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885			
V252	AE BA682 BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682			
V253	AE BA682 BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682			
V254	AE BA885 CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885			
V256	AE BA885 CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885			
V257	AE BA682 BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682			
V258	AE BA682 BER.SCH.DI.VHF DIODE	AE 006.9797	VALVO	BA682			
V259	AE BA885 CLR2U5 50V PIN PIN DIODE	817.1490	SIEMENS	BA885			
V354	AK BCY59IX N 45V 200MA TRANSISTOR	AK 010.5163	VALVO	BCY59IX			
V356	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET			
V357	AM J111A N-D 35V JFET FET	AM 007.2038	SILICONIX	J111A GEGURTET AMMOP			
V358	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET			
V361	AM J111A N-D 35V JFET FET	AM 007.2038	SILICONIX	J111A GEGURTET AMMOP			
V362	AE BZX79/C33 0,5W ZDI ZENER DIODE	AE 012.2632	AEG	BZX55/C33			
V363	AE BZX79/C33 0,5W ZDI ZENER DIODE	AE 012.2632	AEG	BZX55/C33			
V364	AE BZX55/C2V7 0,5W ZDI ZENER DIODE	AE 086.8228	AEG-TELEF.	BZX55/C2V7			
V365	AK BCY59IX N 45V 200MA TRANSISTOR	AK 010.5163	VALVO	BCY59IX			
V366	AE BZX79/C13 0,5W ZDI ZENER DIODE	AE 012.2549	VALVO	BZX79/C13			
V381	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A			
V389	AE BA483 BER.SCH.DI.UHF DIODE	AE 568.2290	VALVO	BA483			
V397	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A			
V405	AK 2N2369A N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A			
V411	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A			
V423	AE BBY31 11/02PF CDI TUNNING DIODE	AE 007.3128	VALVO	BBY31			
V425	AK BFR96 N 15V 75MA TRANSISTOR	AK 093.2738	VALVO	BFR96			
V451	AE BB909B 25/ 3PF CDI TUNING DIODE	AE 092.9600	VALVO	BB909B			
V453	AK 2N2369A N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A			
V458	AE 5082-2800 SCHOTTKY DIODE	AE 012.9066	HEWLETT-P.	5082-2800			
V459	AE 5082-2800 SCHOTTKY DIODE	AE 012.9066	HEWLETT-P.	5082-2800			
V465	AK CA3183AE 5XN TR.ARRAY TRANSISTOR ARRAY	AK 249.8594	RCA	CA3183AE			
V500	AE BA483 BER.SCH.DI.UHF DIODE NUR VAR/ONLY MOD: 20	AE 568.2290	VALVO	BA483			
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für		Sachnummer	Blatt
			Date	Parts list for		Stock Nr.	Page
		26	0489	ED HF-TEIL		821.9010.01 SA	21+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
V501	AE BA483 BER.SCH.DI.UHF DIODE NUR VAR/ONLY MOD: 20	AE 568.2290	VALVO	BA483	
V502	AE BA483 BER.SCH.DI.UHF DIODE NUR VAR/ONLY MOD: 20	AE 568.2290	VALVO	BA483	
V502	RL O-OHM-WIDERST. 0204 O-OHM RESISTOR NUR VAR/ONLY MOD: 30	RL 069.0000	DRALORIC	OMA 0204	
V503	AE BA483 BER.SCH.DI.UHF DIODE NUR VAR/ONLY MOD: 20	AE 568.2290	VALVO	BA483	
V505	AE BA483 BER.SCH.DI.UHF DIODE NUR VAR/ONLY MOD: 20	AE 568.2290	VALVO	BA483	
V505	RL O-OHM-WIDERST. 0204 O-OHM RESISTOR NUR VAR/ONLY MOD: 30	RL 069.0000	DRALORIC	OMA 0204	
V506	AE BA483 BER.SCH.DI.UHF DIODE NUR VAR/ONLY MOD: 20	AE 568.2290	VALVO	BA483	
V527	AK 2N2369A N 15V 200MA TRANSISTOR NUR VAR/ONLY MOD: 20	AK 010.4680	VALVO	2N2369A	
V535	AK 2N2369A N 15V 200MA TRANSISTOR NUR VAR/ONLY MOD: 20	AK 010.4680	VALVO	2N2369A	
V600	AK 2N2369A N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A	
V601	AE 5082-2800 SCHOTTKY DIODE	AE 012.9066	HEWLETT-P.	5082-2800	
V602	AE 5082-2800 SCHOTTKY DIODE	AE 012.9066	HEWLETT-P.	5082-2800	
V610	AK 2N2369A N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A	
V635	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V640	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V660	AK 2N2369A N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A	
W1	DX HF-KABEL	821.9133			
W115	DX FLACHBANDKABEL	821.9704			
X110	FJ EINLOET-WINKELST.SMC MALE SOLDERING CONNECTOR	FJ 080.6523	ROSENBERGE	39S201-400D2	
X113	FJ EINBAUSTECKER SYST.SMC CONNECTOR	FJ 082.6895	SUHNER	82 SMC-50-O-1	
X123	FJ EINBAUSTECKER SYST.SMC CONNECTOR	FJ 082.6895	SUHNER	82 SMC-50-O-1	
X124	FJ EINBAUSTECKER SYST.SMC CONNECTOR	FJ 082.6895	SUHNER	82 SMC-50-O-1	
X187	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 2X2-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36	
X188	FJ EINBAUSTECKER F.GS SMB PLUG	FJ 063.5168	ROSENBERGE	59S 101-400D2	
X240	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 3-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36	
X245	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 3-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36	
X261	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 2X2-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36	
X262	FJ EINBAUSTECKER F.GS SMB PLUG	FJ 063.5168	ROSENBERGE	59S 101-400D2	
X263	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 3-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36	
X264	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 2X2-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36	
X265	FJ EINBAUSTECKER F.GS SMB PLUG	FJ 063.5168	ROSENBERGE	59S 101-400D2	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	26	0489	ED HF-TEIL	821.9010.01 SA	22+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in		
X266	FJ EINBAUSTECKER F.GS SMB PLUG	FJ 063.5168	ROSENBERGE	59S 101-400D2			
X270	FJ EINBAUSTECKER F.GS SMB PLUG	FJ 063.5168	ROSENBERGE	59S 101-400D2			
X271	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 2-POLIG 3-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36			
X278	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 3-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36			
X279	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 2-POLIG 3-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36			
X280	FJ EINBAUSTECKER F.GS SMB PLUG	FJ 063.5168	ROSENBERGE	59S 101-400D2			
X293	FJ EINBAUSTECKER F.GS SMB PLUG	FJ 063.5168	ROSENBERGE	59S 101-400D2			
X294	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 2X2-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36			
X295	FJ EINBAUSTECKER F.GS SMB PLUG	FJ 063.5168	ROSENBERGE	59S 101-400D2			
X296	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 3-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36			
X297	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 2X2-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36			
X298	FJ EINBAUSTECKER F.GS SMB PLUG	FJ 063.5168	ROSENBERGE	59S 101-400D2			
X345	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 2-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36			
X380	FJ EINBAUSTECKER F.GS SMB PLUG	FJ 063.5168	ROSENBERGE	59S 101-400D2			
X425	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 2-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36			
X431	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 2-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36			
X444	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 3-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36			
X452	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 2-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36			
X484	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 3-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36			
X512	FP INDIREKT.STECKERL.36P. PIN CONNECTOR NUR VAR/ONLY MOD: 20	FP 242.3600	BINDER	742-5-11-0178-00-36			
X513	FJ EINBAUSTECKER SYST.SMC CONNECTOR NUR VAR/ONLY MOD: 20	FJ 082.6895	SUHNER	82 SMC-50-O-1			
X514	FP INDIREKT.STECKERL.36P. PIN CONNECTOR NUR VAR/ONLY MOD: 20	FP 242.3600	BINDER	742-5-11-0178-00-36			
X515	FJ EINBAUSTECKER SYST.SMC CONNECTOR NUR VAR/ONLY MOD: 20	FJ 082.6895	SUHNER	82 SMC-50-O-1			
X520	FP INDIREKT.STECKERL.36P. PIN CONNECTOR NUR VAR/ONLY MOD: 20	FP 242.3600	BINDER	742-5-11-0178-00-36			
X521	FJ EINBAUSTECKER SYST.SMC CONNECTOR NUR VAR/ONLY MOD: 20	FJ 082.6895	SUHNER	82 SMC-50-O-1			
X600	FP INDIREKT.STECKERL.36P. PIN CONNECTOR 2-POLIG	FP 242.3600	BINDER	742-5-11-0178-00-36			
X630	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36			
ROHDE & SCHWARZ		Äl	Datum Date	Schaltteilliste für Parts list for		Sachnummer Stock Nr.	Blatt Page
		26	0489	ED. HF-TEIL		821.9010.01 SA	23+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
X631	3-POLIG FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36	
X632	1-POLIG 3-POLIG FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36	
Z113	CHOKE LD 5MHZ/20DB 10A	LD 453.4404	OXLEY	DBZ4/P/22000	
Z131	CHOKE LD 5MHZ/20DB 10A	LD 453.4404	OXLEY	DBZ4/P/22000	
Z133	CHOKE LD 5MHZ/20DB 10A	LD 453.4404	OXLEY	DBZ4/P/22000	
Z153	CHOKE LD 5MHZ/20DB 10A	LD 453.4404	OXLEY	DBZ4/P/22000	
Z155	CHOKE LD 5MHZ/20DB 10A	LD 453.4404	OXLEY	DBZ4/P/22000	
Z301	CHOKE LD 5MHZ/20DB 10A	LD 453.4404	OXLEY	DBZ4/P/22000	
Z303	CHOKE LD 5MHZ/20DB 10A	LD 453.4404	OXLEY	DBZ4/P/22000	
Z304	CHOKE LD 5MHZ/20DB 10A	LD 453.4404	OXLEY	DBZ4/P/22000	
Z310	CB 470PF +-20% HDK700 DF FEED-THROUGH CAPACITOR	CB 023.0136	DRALORIC	DGD 3X12	
Z325	CHOKE LD 5MHZ/20DB 10A	LD 453.4404	OXLEY	DBZ4/P/22000	
Z391	CHOKE LD 5MHZ/20DB 10A	LD 453.4404	OXLEY	DBZ4/P/22000	
Z401	CB 22PF +-5% NPO DF-KO FEED-THROUGH CAPACITOR	CB 023.0059	DRALORIC	NPO	
Z423	CB 470PF +-20% HDK700 DF FEED-THROUGH CAPACITOR	CB 023.0136	DRALORIC	DGD 3X12	

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ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	26	0489	ED HF-TEIL	821.9010.01 SA	24-



ROHDE & SCHWARZ

Unternehmensbereich
Rundfunk- und Fernsehtechnik

Circuit Description

TV Test Receiver

EMF ... IF Section / Video Amplifier

821.7518

Table of Contents

1	IF Input Section	
1.1	IF Control Stage	1.1
1.2	IF Output Stage	1.1
1.3	Selection Stage	1.1
1.4	Zero Reference	1.1
2	Demodulation	
2.1	Envelope Detector	1.2
2.2	Synchronous Detector	1.2
2.3	Q Signal Amplifier	1.2
3	Signal Processing for Synchronous Detector	
3.1	38.9-MHz Oscillator	1.3
3.2	Phase Synchronization of the 38.9-MHz Oscillator	1.3
3.3	Frequency Synchronization of the 38.9-MHz Oscillator	1.3
3.4	Frequency Phase Comparator	1.3
3.5	Window Comparator	1.4
3.6	Frequency Offset	1.4
4	Video Amplifier	1.4
5	Sound Section	
5.1	Intercarrier Processing	1.4
6	Coding options	1.5

1 IF Input Section

See 821.7518 S, sheet 1

1.1 IF Control Stage

The IF signal is applied from the IF/RF switchover (motherboard) to the impedance converter T101 via X101. V101 Operates in the collector circuit as a decoupler. The L-R elements R108/L103 and R131/L105 are used to compensate the frequency response. V102 initially operates with a normal gain. The gain of V104 is determined via the RF negative feedback C114/R125 where the PIN diodes V114/V115 apply to the resistor R125 a voltage that depends on the control voltage and equals approximately ground potential. If the control voltage exceeds the threshold of V112, V102 is also controlled via the PIN diode V113. V103 operates as a control voltage amplifier in a collector circuit. The control range of the complete circuit is approx. 40 dB. The controlled IF signal is applied to V105. The gain of V105 is adjusted using R143. The IF signal is applied to C500 (selection stage), to the IF output stage and to the intercarrier processing.

1.2 IF Output Stage

The IF signal is amplified by V106 and transformed by T102 to the output impedance of 50 Ω . V107 operates as a constant-current source and acts as the load to V106. The IF signal is tapped at X102 and applied to the connector on the rear panel.

1.3 Selection Stage

See 821.7518 S, sheets 4 and 5

The IF signal is applied via the impedance converter V500 and the amplifier V501 to the two traps for the associate sound and the adjacent sound. The highpass with an additional associate sound trap and an adjacent vision trap follows after further amplification by V502/V503. In the case of operation without a sound trap (model EMF-D), the relays switch capacitors in parallel to the resonant circuits and thus shift the trap frequencies to lower values. The two all-pass filters between the stages V504/V505, V511/V512 and V516/V517 are used to correct the group-delay. In the case of operation with a sound trap, the group-delay response is set corresponding to the respective television standard (equalized fully or by half), in the case of operation without a sound trap the relay switches to a level group-delay response. The Nyquist filter between C615 and C637 generates the Nyquist slope with a 6-dB reduction for the vision carrier amplitude. The amplifiers V521/V522 are followed by an IF bandpass and a trap for the 2nd sound carrier which can be selected by K509.

1.4 Zero Reference

See 821.7518 S, sheet 3

For the zero reference, the diode switch V361/V362 disables the IF signal during the zero-reference pulse from the zero-reference pulse processor or during an externally applied zero-reference pulse. The signal is divided following the isolating stage V364 to the envelope detector and the synchronous detector.

2 Demodulation

2.1 Envelope Detector See 821.7518 S, sheet 3

The envelope demodulator V371 is present at the output of transformer T361 following amplification by V365/V366/V367. The transformer T361 also supplies the IF test output P361 ($Z = 50 \Omega$). Following video-frequency response correction by R384/L368, the emitter follower V376 is driven via X365. After changing the position of jumper X365, an external video signal can be applied to P365 for test purposes. The DC voltage of the signals demodulated by the envelope detector is adjusted using V377, R403. The setting for the synchronous demodulator in the video amplifier must be taken into account. R423 influences the DC voltage of the video signals demodulated by both the envelope and synchronous detectors.

2.2 Synchronous Detector See 821.7518 S, sheet 2

The synchronous detector consists of the in-phase demodulator U103 and the quadrature demodulator U102. The IF signal is applied to the two demodulators via C366, X137 and the hybrid circuit with T202. The in-phase demodulator U103 delivers the video signal. The switching carrier is exactly in phase with the IF signal, i.e. only the peaks of the modulated IF signal are allowed to pass so that the video signal can be tapped following the lowpass C243/L232/C244. The phase of the switching carrier is offset by 90° compared to the IF signal in the quadrature demodulator U102. With correct phase, only the zero-axis crossings of the signal are switched through so that the output voltage is zero in this case.

2.3 Q Signal Amplifier See 821.8514 S, sheet 4 and 821.7518 S, sheet 2

The Q signal comes from the Q demodulator and is applied to N233.3. V241 and V242 operate as a low-impedance push-pull amplifier so that the Q signal with an impedance of 75Ω is available at the Q output X118 and X117. The phase of the Q signal can be shifted using R348 (821.7518 S, sheet 2). This is carried out by changing the bias voltage at N233.3. N234 decouples the Q signal and applies it via X105.10 to V194 for the 38.9-MHz oscillator control loop.

3 Signal Processing for Synchronous Detector

See 821.7518 S, sheet 2

3.1 38.9-MHz Oscillator

The free-running oscillator with V211 is offset by tuning diode V212. The tuning voltage required is connected via L202. V218 amplifies and distributes the signal to the following stages:

- * Q and I demodulators
- * Driver amplifier V164 for the 38.9-MHz signal to the frequency phase comparator U101
- * Driver amplifier V213 for frequency offset correction in the RF section

3.2 Phase Synchronization of the 38.9-MHz Oscillator

The Q signal is equal to zero in the stable, phase locked state. The Q signal is converted continuously to the I signal in the case of phase deviations. This signal is applied to V194 and is sampled by the H sampling pulse during the back porch with switch S101 in position "sampled" and stored by C205. With switch S101 in position "unsampled" the mean value of the Q signal is applied further and the time constant of the control loop is reduced. N106B is used for decoupling. The sampled Q signal is integrated by N106C/C206. N109A reduces the control error by a factor of 10.

3.3 Frequency Synchronization of the 38.9-MHz Oscillator

If both the phase and frequency of the oscillator deviate (e.g. during the building-up time), the Q signal becomes zero at certain frequency offsets (e.g. error frequency = line frequency) and thus incorrectly signals frequency and phase synchronization. This makes the following auxiliary circuit necessary.

3.4 Frequency Phase Comparator

The vision IF represents the reference for the control loop. The IF is coupled out following the Nyquist filter (821.7518 S, sheet 5), amplified by V171/V172 and applied to U101.6. The sound trap L171/C172 removes the undesired sound carriers. The reference signal comes from the 38.9-MHz oscillator and is applied to U101.9. The operating point of U101 is set using R237. The output signals of U101 drive N102. There is no signal at N102.6 if the frequencies are the same. A positive or negative sawtooth voltage is present here if the frequencies deviate. This sawtooth is differentiated by N103 and sampled by N104 with the H sampling pulse. Driving of N104 by the delay circuit with V178/V179 results in sampling immediately after the back porch. The sampled signal is stored by C201 and drives the following window comparator.

3.5 Window Comparator

N106A/D generates a positive voltage if the frequency is too low, or a negative voltage if the frequency is too high. Voltage changes $\leq \pm 100$ mV at the input of the comparator are within the "window" and are ignored. This voltage causes larger changes in the control voltage at N109A.1 via the integrator. The frequency of the 38.9-MHz oscillator can be offset by approx. 75 kHz.

3.6 Frequency Offset

N107D inverts the negative voltage from N106D.14 in the case of a frequency offset and N107B amplifies the positive voltage from N106A.1. N107C is used for decoupling and delivers a switching voltage to the RF section (821.9010 S, sheet 6) to switch over the time constant of the frequency offset correction.

4 Video Amplifier

See 821.7518 S, sheet 3

The video signal is selected from the envelope or synchronous detector by the SYNC/ENVELOPE switchover signal from the motherboard. It is applied from W105.8 to N420.2 via X371. R423 is used to set the DC voltage level for the output signal of the synchronous detector. This setting is also effective for the envelope (see 2.1). The frequency response of the lowpass L421, C423, L422, C424 can be adjusted using R428. The transistors N421 A to E are located in an IC and are thus thermally coupled. V426 is driven in opposite phase by means of N421 D and N421 E via the differential amplifier N421 A, N421 B in order to obtain the required gain. N421 C operates as a constant-current source and acts as the load for V426. The gain is adjusted internally using R445 and externally using the front-panel control R458.

5 Sound Section

See 821.7518 S, sheet 1

5.1 Intercarrier Processing

The circuit operates in quasi-parallel sound mode. The IF is applied to the intercarrier processing via W11. The emitter follower V131 is used for decoupling. R183 and R203 are used to match the levels for 33.4 MHz (sound 1) and 33.1578 MHz (sound 2) where sound 1 is set to -17 dB and sound 2 to -10 dB referred to the vision IF. The vision IF is required for sound demodulation on the motherboard. The sound IFs are selected by ceramic filters, the vision IF is selected by a discrete bandpass filter. The sound carriers are added to the vision carrier by T107 and T108 and applied further to the motherboard.

6 Coding Options

Coding jumper	Circuit diagram	Position	Function
X 119	821.7518 S, sheet 2	1-2 1-2open	Normal operation Control loop for frequency synchronization of 38.9 MHz oscillator interrupted, pins 3, 4 = ground
X 123	"	1-2 2-3	Normal operation I signal to control loop for phase synchronization of 38.9 MHz oscillator
X 127	"	1-2 1-2open	Normal operation Frequency synchronization of 38.9 MHz oscillator interrupted
X 131	"	1-2 1-2open	Normal operation 38.9 MHz oscillator OFF
X 133	"	1-2 2-3	Normal operation 38.9 MHz oscillator free-running
X 137	"	1-2 1-2open	Normal operation IF signal to be demodulated disconnected, pins 3,4 = ground
X 361	821.7518 S, sheet 3	1-2 1-2open	Normal operation Zero reference disabled
X 365	"	1-2 2-3	Normal operation External video input to video amplifier
X 366	"	1-2 1-2open	Normal operation Adjustment of video amplifier
X 371	"	1-2 2-3	Normal operation Switchover to synchrodemodulation detector disabled
X 501 X 502 X 503	821.7518 S sheet 4	1-2 1-2open	Normal operation Input and test facilities for checking the sound traps, pin 3 = ground
X 504 X 505	"	1-2 1-2open	Normal operation As X501-503 except all-pass filters
X 506	"	1-2 1-2open	Normal operation As X501-503, except Nyquist filter



Summary of circuit documents for IF section/video amplifier

Block diagram 821.4019 S, sheet 1 in Register 3

Block diagram 821.7518 S, sheet 5.1

IF section, video amplifier

Circuit diagram 821.7518 S, sheet 1

IF control stage $\Delta V_U = 40\text{dB}$, intercarrier processing

Circuit diagram 821.7518 S, sheet 2

38.9 MHz oscillator, Q and I demodulators, frequency/phase comparator, sampling, window comparator, frequency offset

Circuit diagram 821.7518 S, sheet 3

Envelope demodulator, video output amplifier

Circuit diagram 821.7518 S, sheet 4

Sound trap, adjacent sound trap, adjacent vision traps, allpass filter 1

Circuit diagram 821.7518 S, sheet 5

Allpass filter 2, Nyquist filter, IF bandpass filter, sound trap

Circuit diagram 821.7518 S, sheet 6

Explanation of models

Board layouts 821.7518, sheet 2 and 3

Parts lists 821.7518 SA, sheet 1 to 41

Nomenclatures et schémas relatifs à la partie FI/amplificateur vidéo

Synoptique 821.4019 S, feuille 1, dans la section 3

Synoptique 821.7518, feuille 5.1

Partie FI, amplificateur vidéo

Schéma de circuit 821.7518 S, feuille 1

Etage de régulation FI (plage de régulation $\Delta V_U = 40$ dB), élaboration de l'interporteuse

Schéma de circuit 821.7518 S, feuille 2

Oscillateur 38,9 MHz, démodulateurs Q et I, comparateur de phase et de fréquence, échantillonnage, discriminateur de fenêtre, décalage de fréquence

Schéma de circuit 821.7518 S, feuille 3

Détecteur d'enveloppe, amplificateur de sortie vidéo

Schéma de circuit 821.7518 S, feuille 4

Réjecteurs de son utile et de son adjacent, réjecteurs d'image adjacente, filtre passe-tout 1

Schéma de circuit 821.7518 S, feuille 5

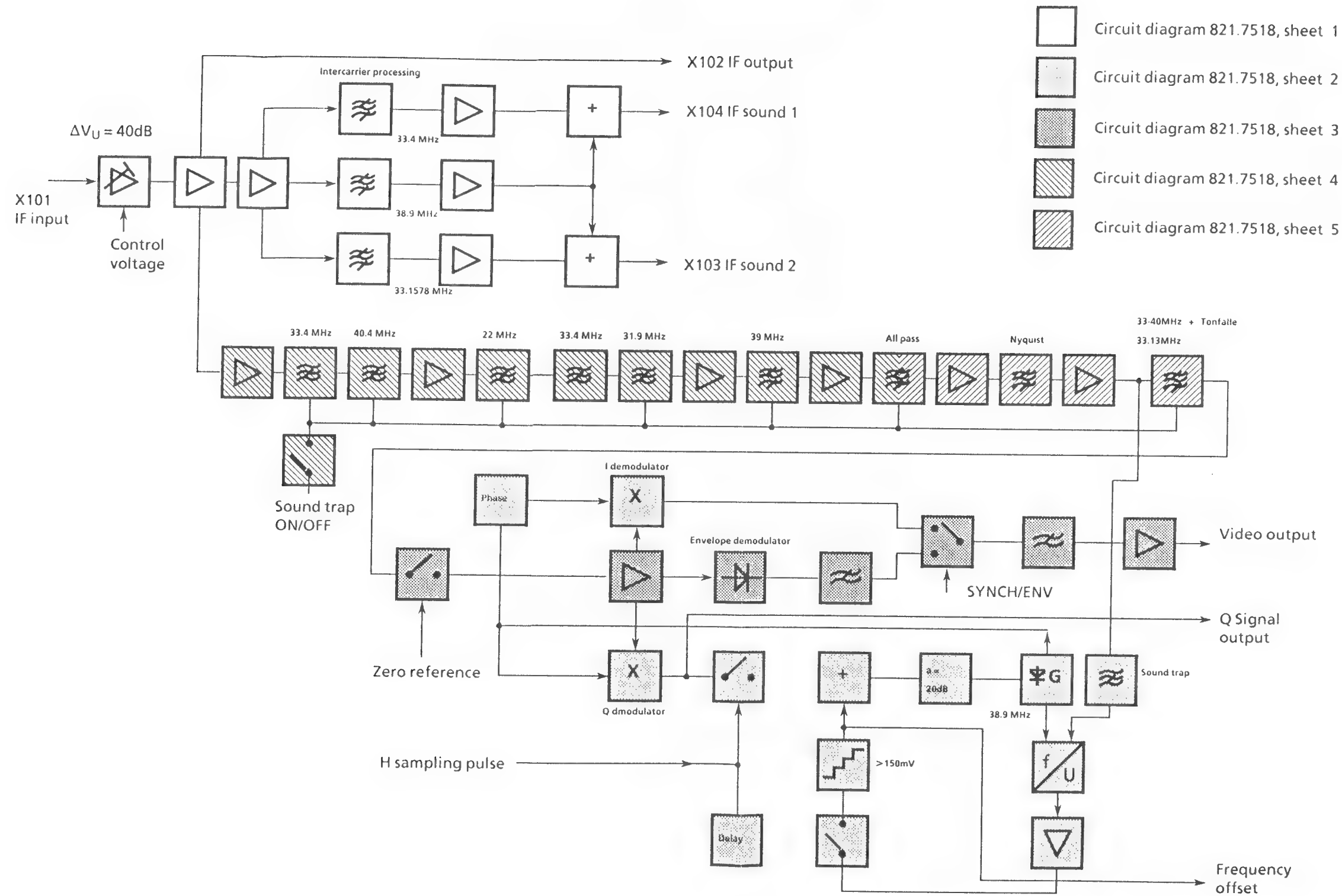
Filtre passe-tout 2, filtre Nyquist, filtre de bande FI, réjecteur son

Schéma de circuit 821.7518 S, feuille 6

Liste des versions

Schémas de cartes 821.7518, feuilles 2, 3

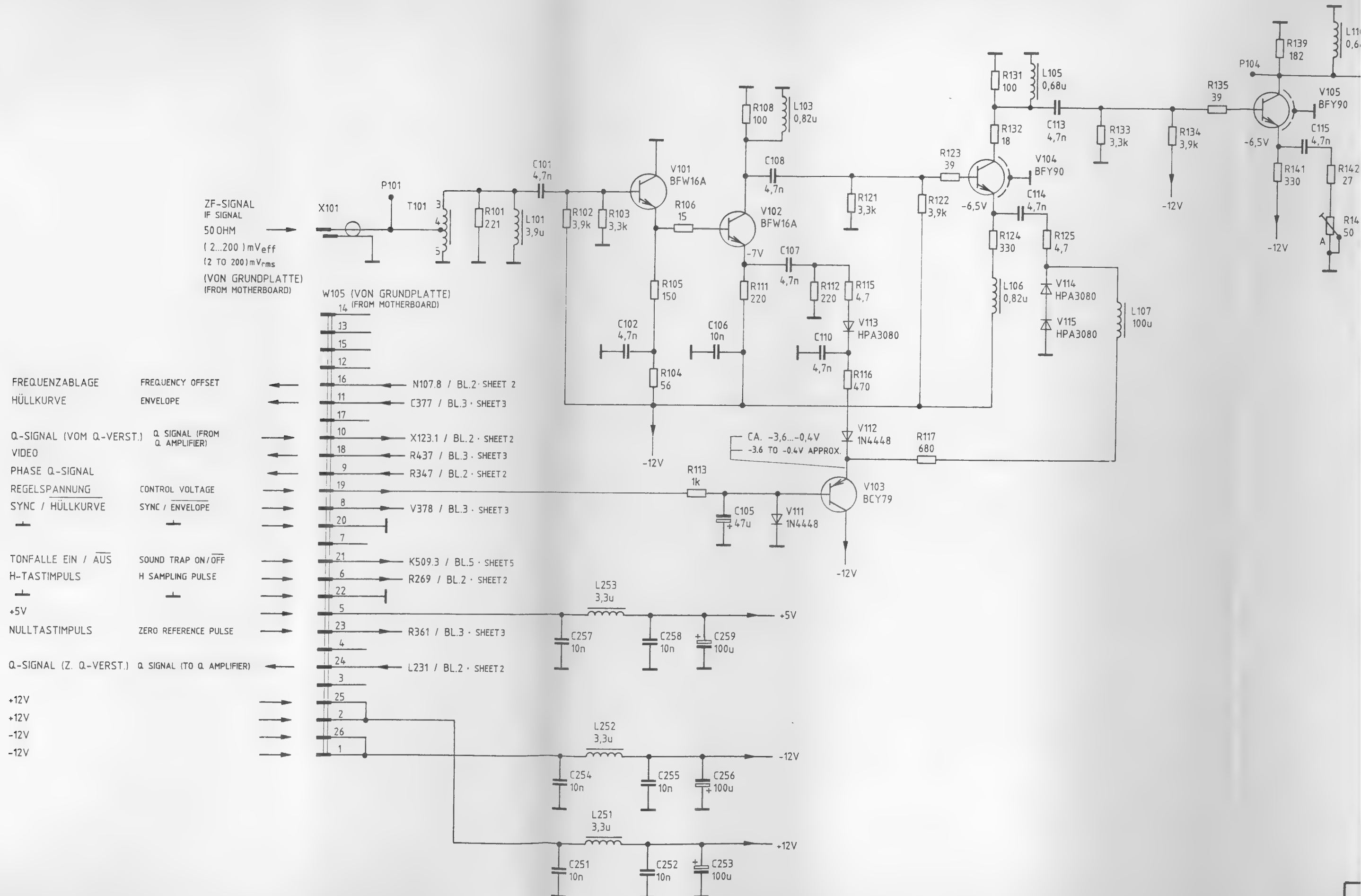
Listes des pièces détachées 821.7518 SA, feuilles 1 à 41



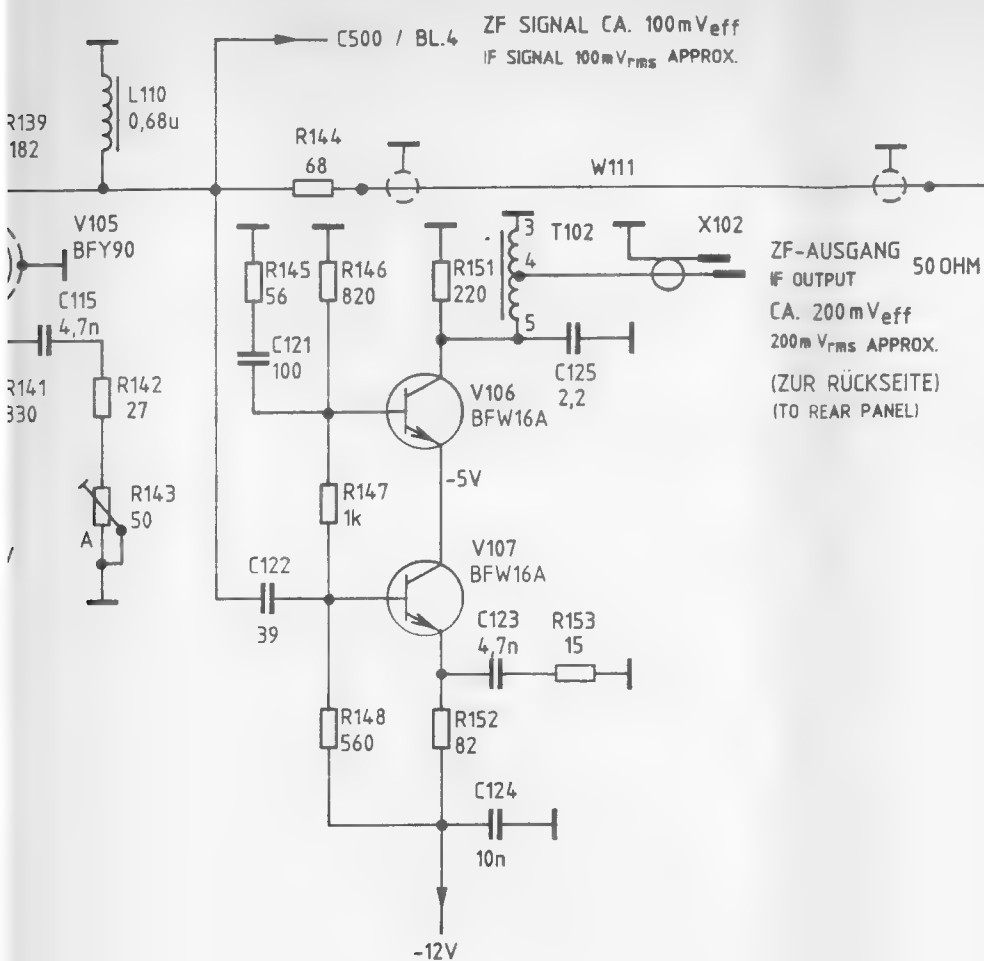
Block diagram EMF - IF section, video amplifier

ZF-REGELSTUFE IF CONTROL STAGE

$\Delta V_U = 40 \text{ dB}$
 $\Delta A_V = 40 \text{ dB}$

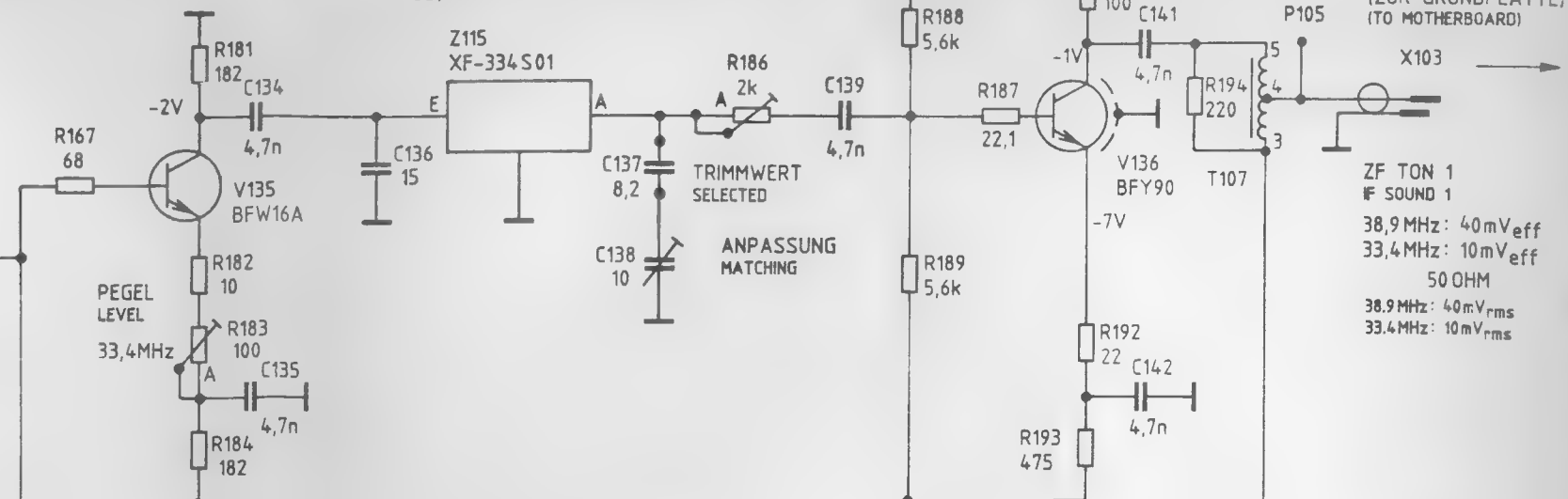


ZF-AUSGANGSSTUFE IF OUTPUT STAGE

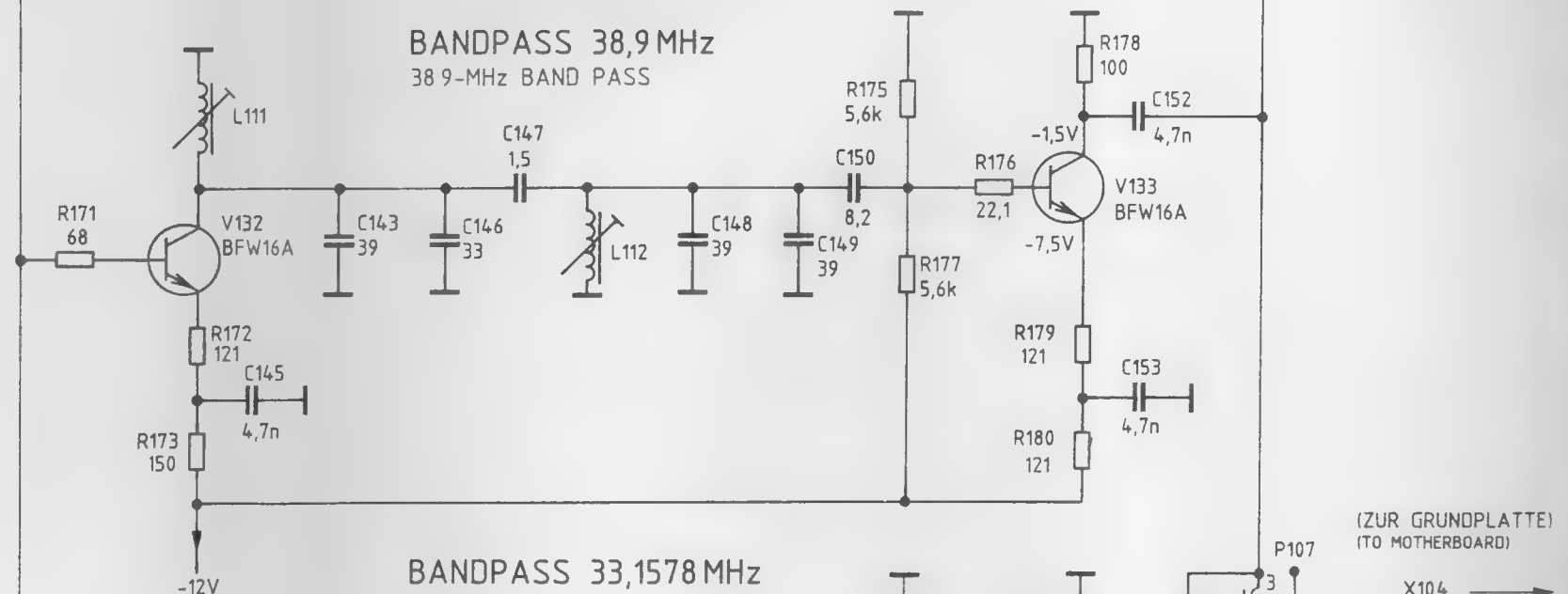


INTERCARRIERAUFBEREITUNG INTERCARRIER PROCESSING

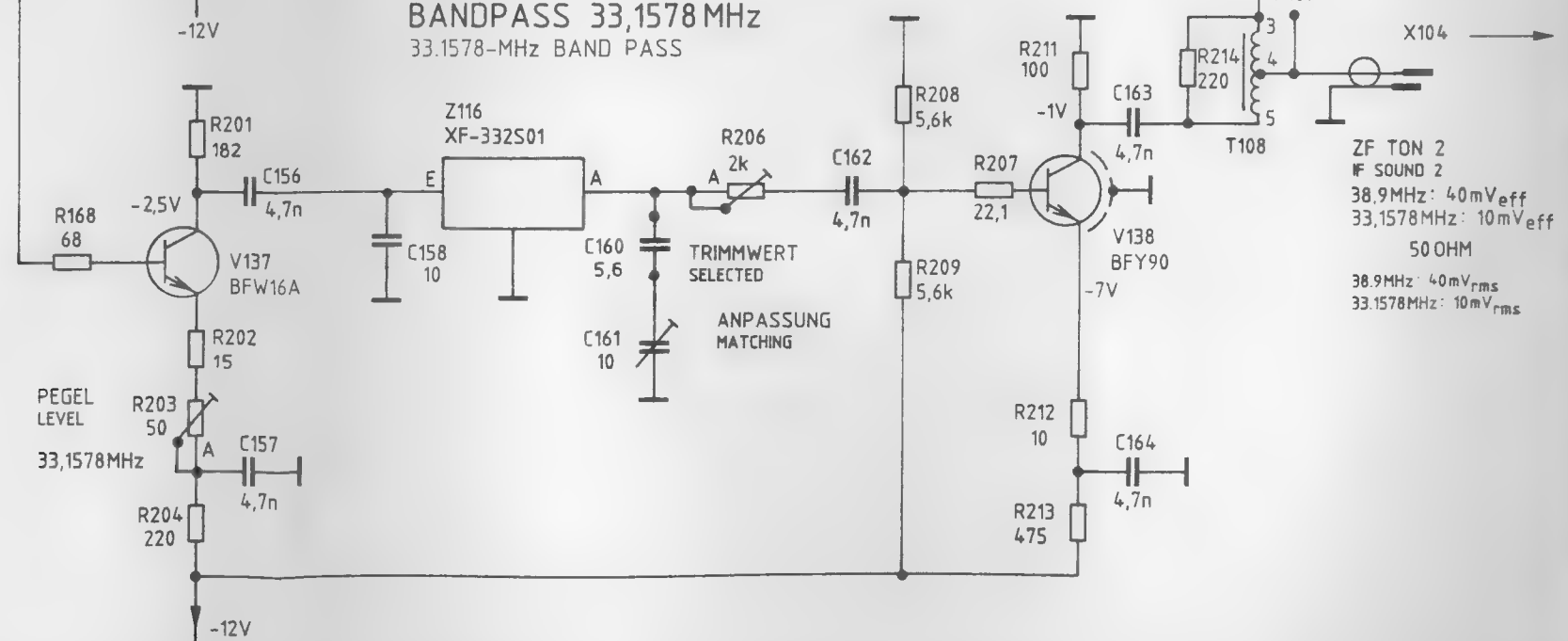
BANDPASS 33,4 MHz 33,4-MHz BAND PASS



BANDPASS 38,9 MHz 38,9-MHz BAND PASS



BANDPASS 33,1578 MHz 33,1578-MHz BAND PASS



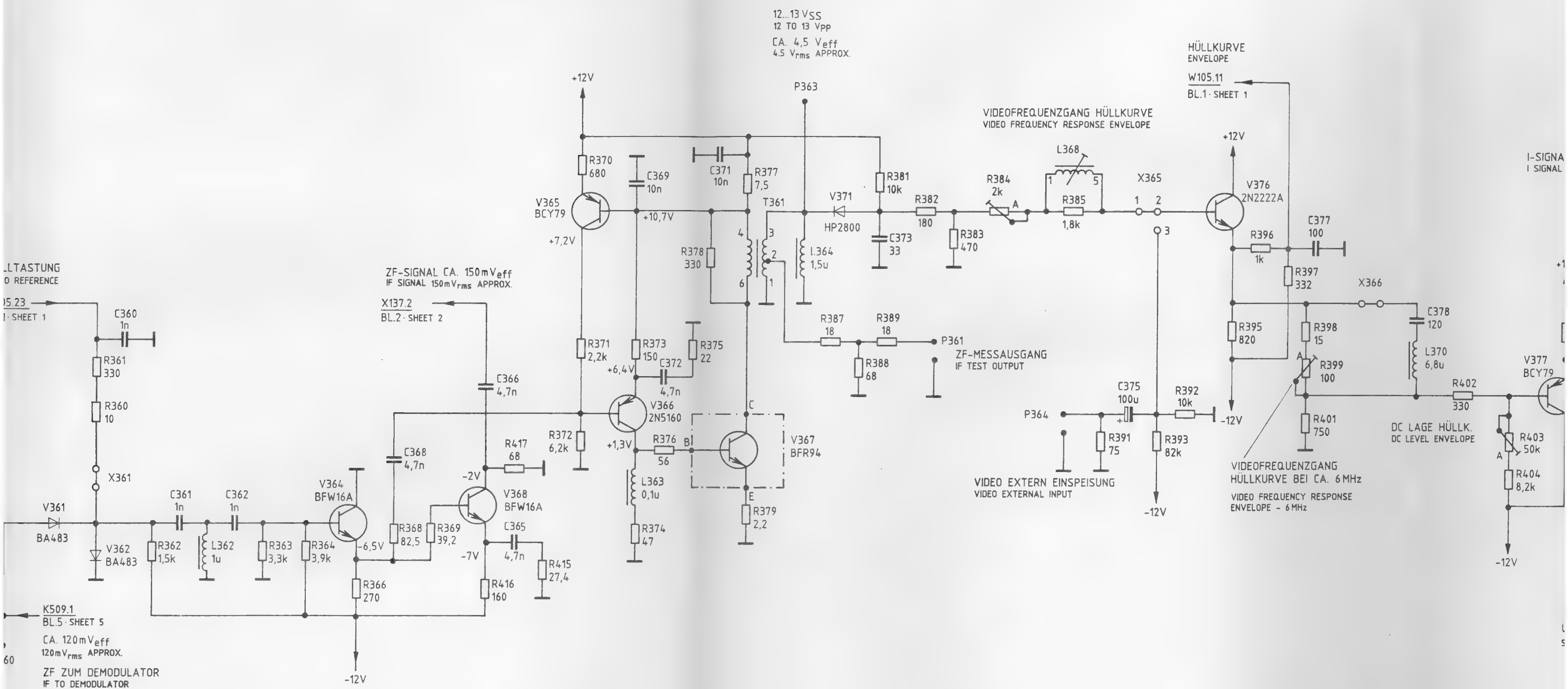
ROHDE & SCHWARZ

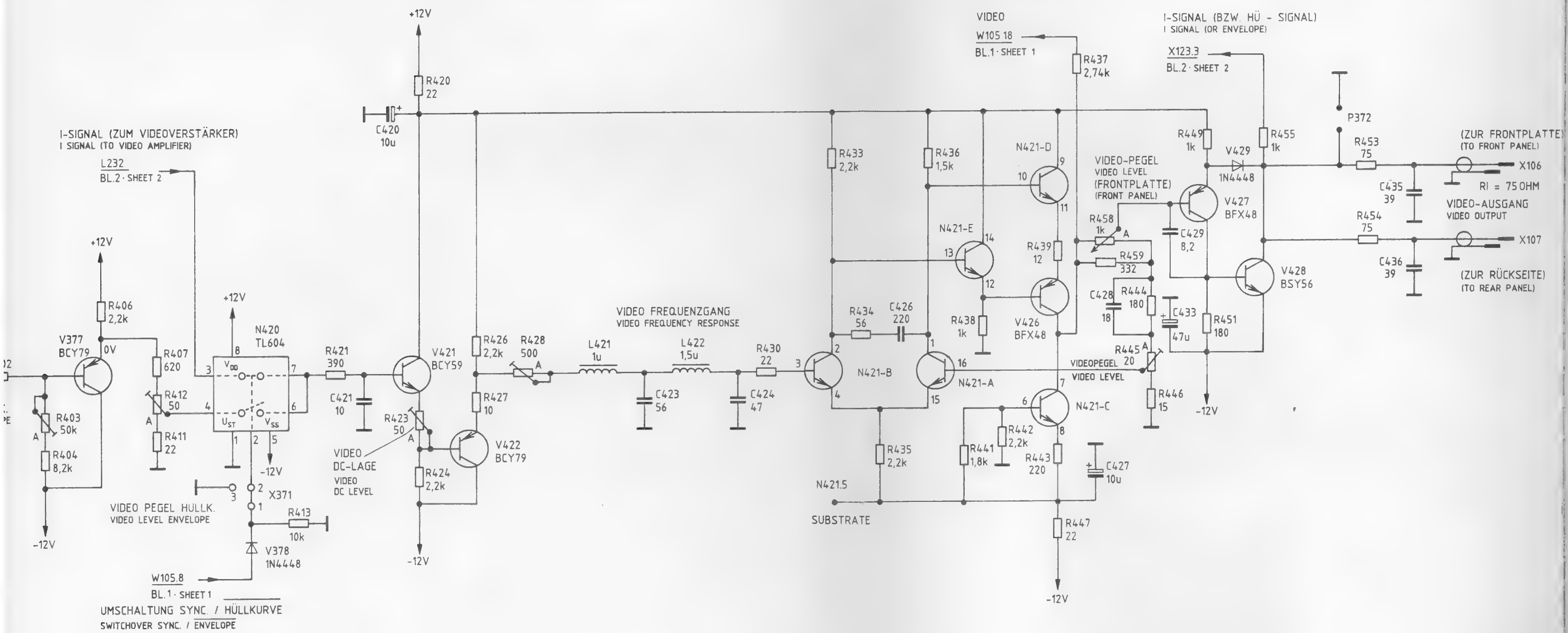
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B	40163	2.88	OS					Bearb	11.86	RP / BA
C	40163	4.88	ST					Gepr		
Änderungs-Mitteilung	Datum	Name	Änderungs-Mitteilung	Datum	Name	Norm				

Benennung ZF-TEIL / VIDEOVERSTÄRKER
IF SECTION / VIDEO AMPLIFIER

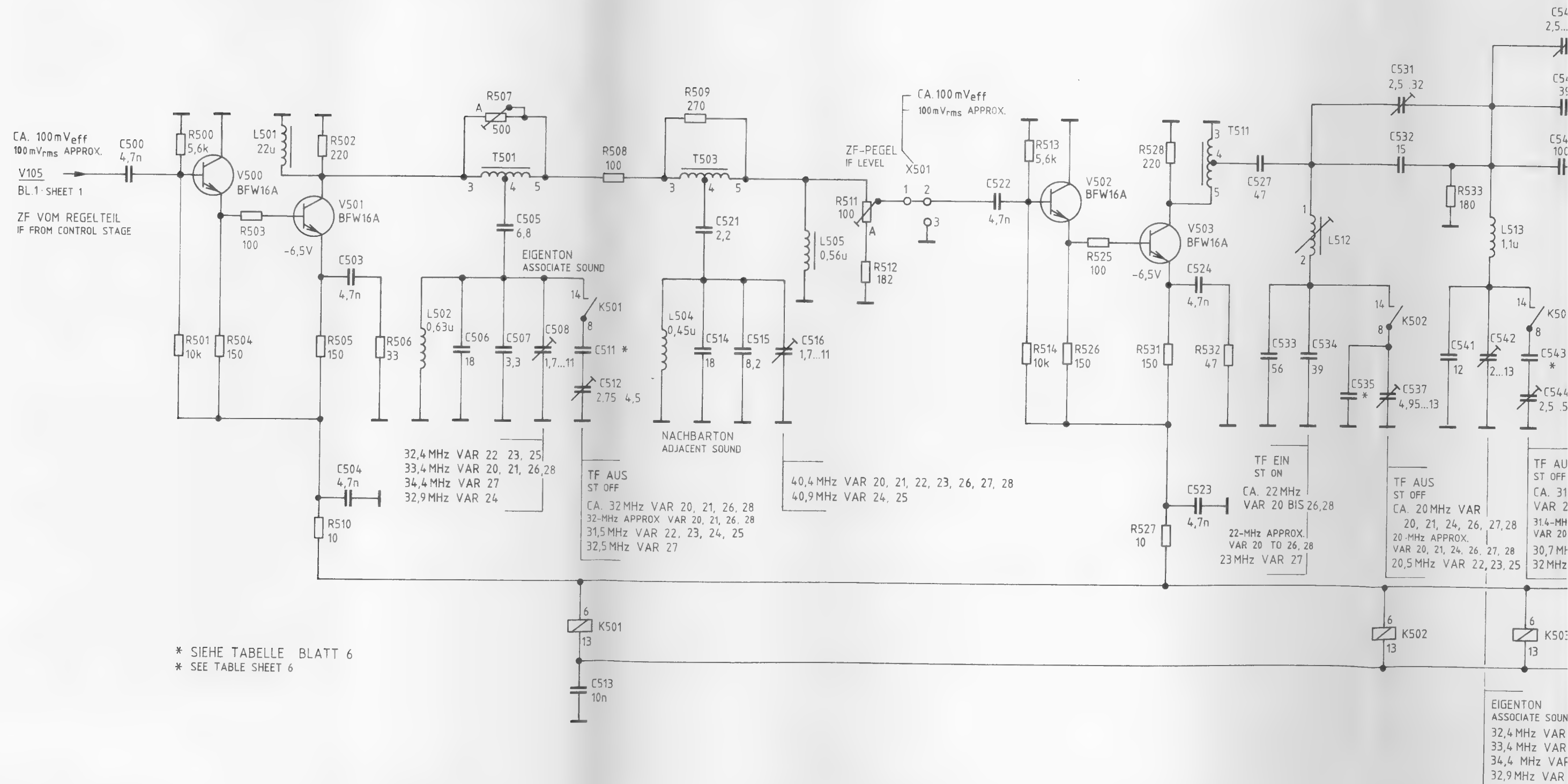
821.7518 S 01
zu Gerät EMF
821.4019 V

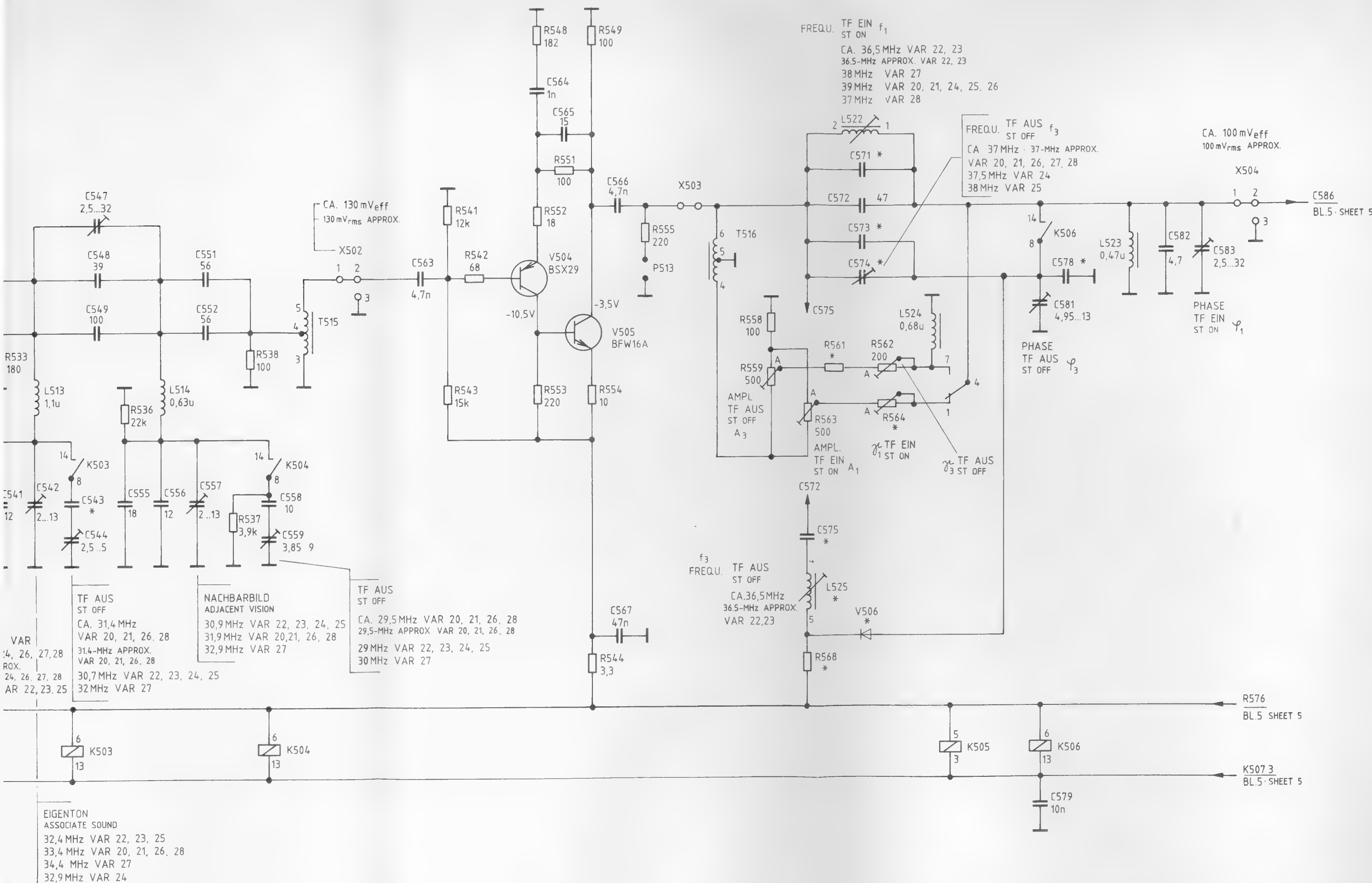






	A	40163	2.88	OS				2KGH	Tag	Name	Benennung	Zeichn. Nr.	821.7518 S	01	3
	B	40163	4.88	ST				Beord	11.86	RP / BA	ZF-TEIL / VIDEOVERSTÄRKER				6
	C	40163	11.88	OS				Gedr			IF SECTION / VIDEO AMPLIFIER				
	Ang	Änderungs	Datum	Nam		Änderungs	Datum	Nam			zu Gerat	EMF	821.4019 V		





	A	40163	1188	OS				2KGH	Tag	Name	Benennung	Zeichn-Nr.	Blatt-Nr.
								Bearb.	11.86	RP / BA	ZF-TEIL / VIDEOVERSTÄRKER IF SECTION / VIDEO AMPLIFIER	821.7518 S	01
	And Zust	Anderungs- Mitteilung	Datum	Name	And Zust	Anderungs- Mitteilung	Datum	Name	Norm		zu Gerät	EMF	reg i V
												821.4019 V	erste Z



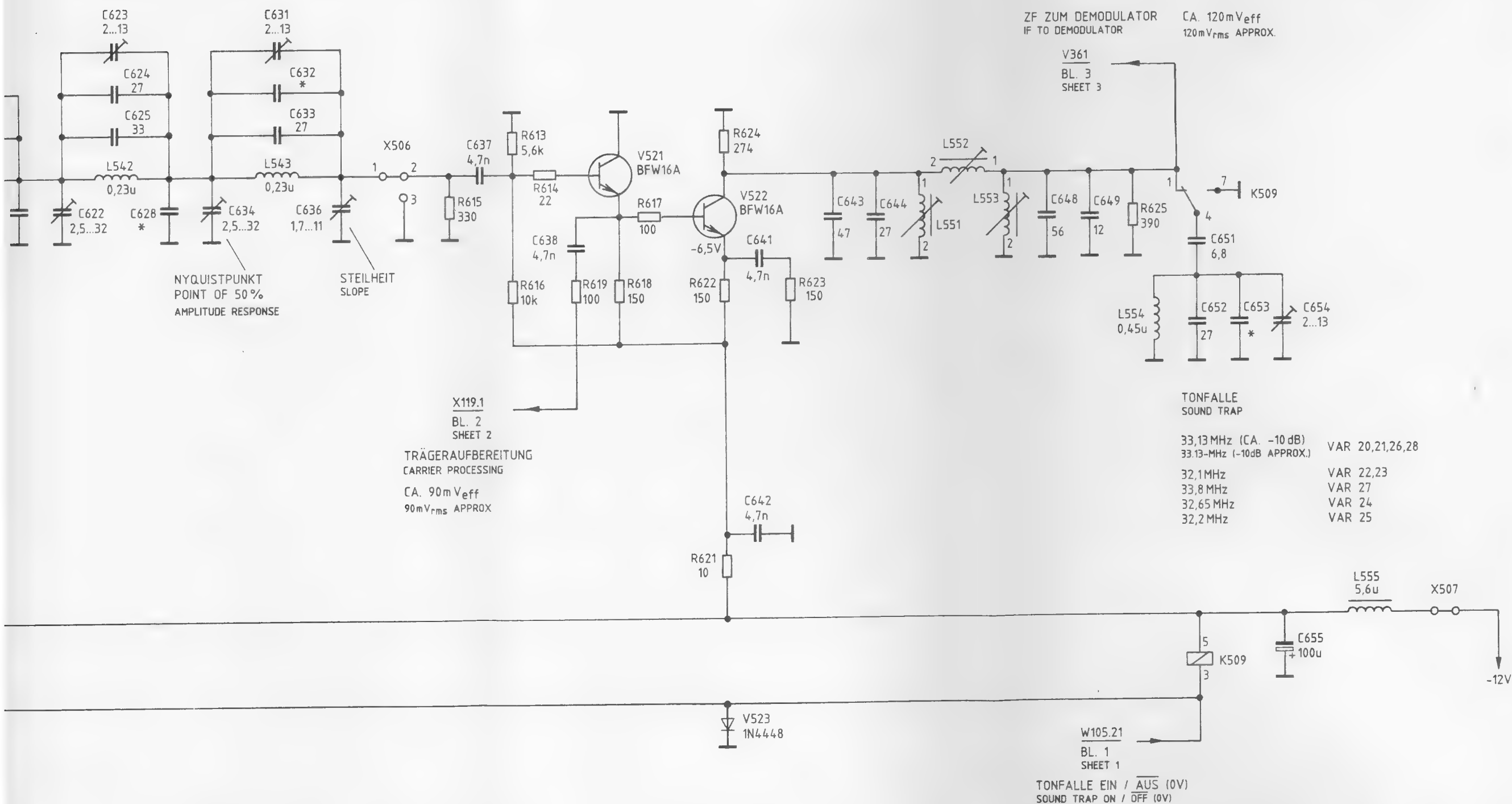
NYQUISTFILTER
NYQUIST-FILTER

ZF-BANDFILTER
IF-BAND-PASS FILTER

TONFALLE
SOUND TRAP

(33-40 MHz) VAR 20,21,24,26,28
(32,5-40 MHz) VAR 22,23,25
(34-40 MHz) VAR 27

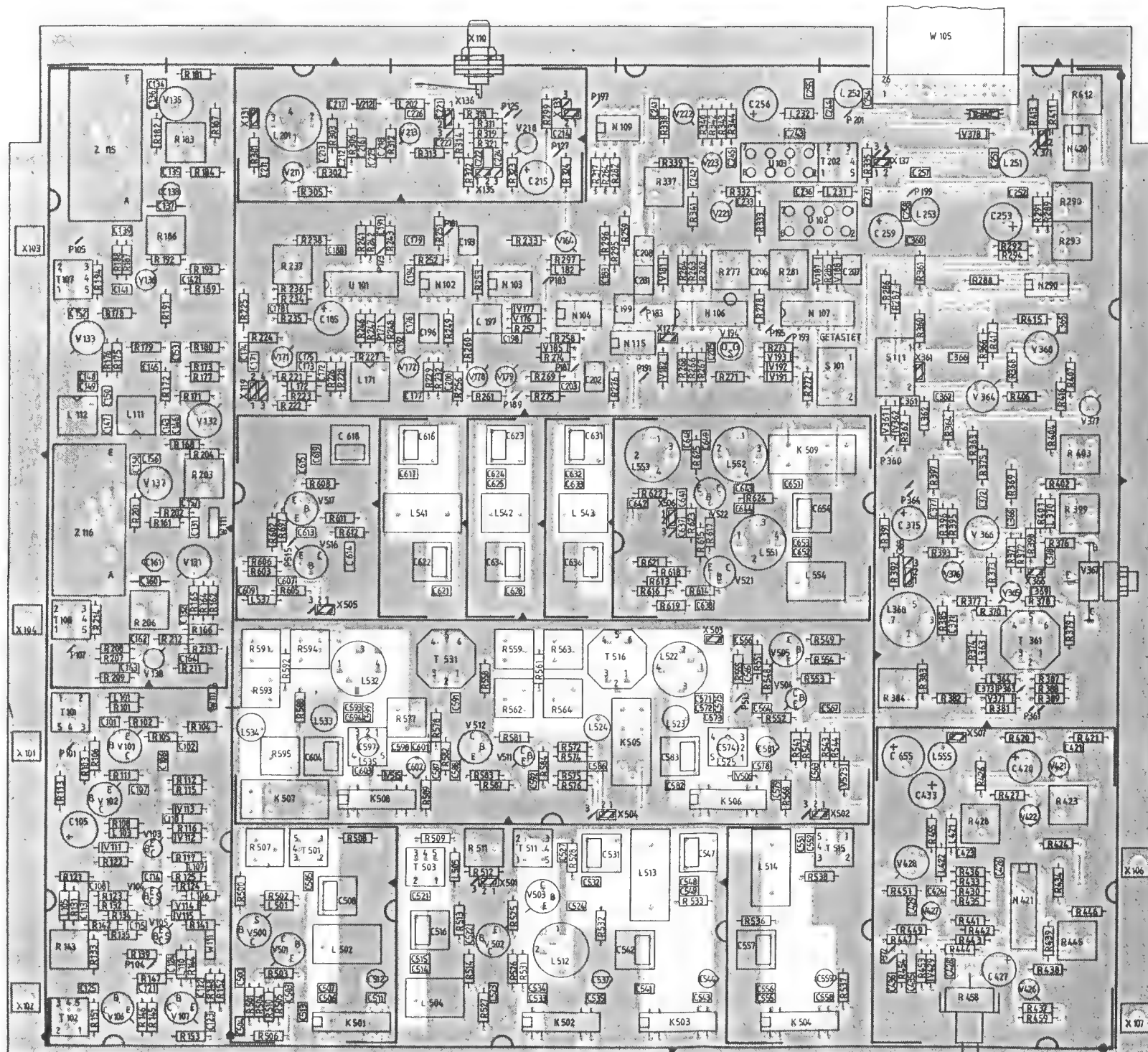
40,9 MHz 44,9 MHz VAR 24,25
40,2 MHz 42,75 MHz VAR 20,21,22,23,26,27,28



A	B	C	D	E
1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35
36	37	38	39	40
41	42	43	44	45
46	47	48	49	50
51	52	53	54	55
56	57	58	59	60
61	62	63	64	65
66	67	68	69	70
71	72	73	74	75
76	77	78	79	80
81	82	83	84	85
86	87	88	89	90
91	92	93	94	95
96	97	98	99	100

Für diese Unterlage behalten wir uns alle Rechte vor.

PF 005 4096-0781	2	3	4	5	6	7	8	07 8001 8
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Ansicht und Leitungsführung Bauteilseite
View of tracks on component side


N106.9 frei von Masse

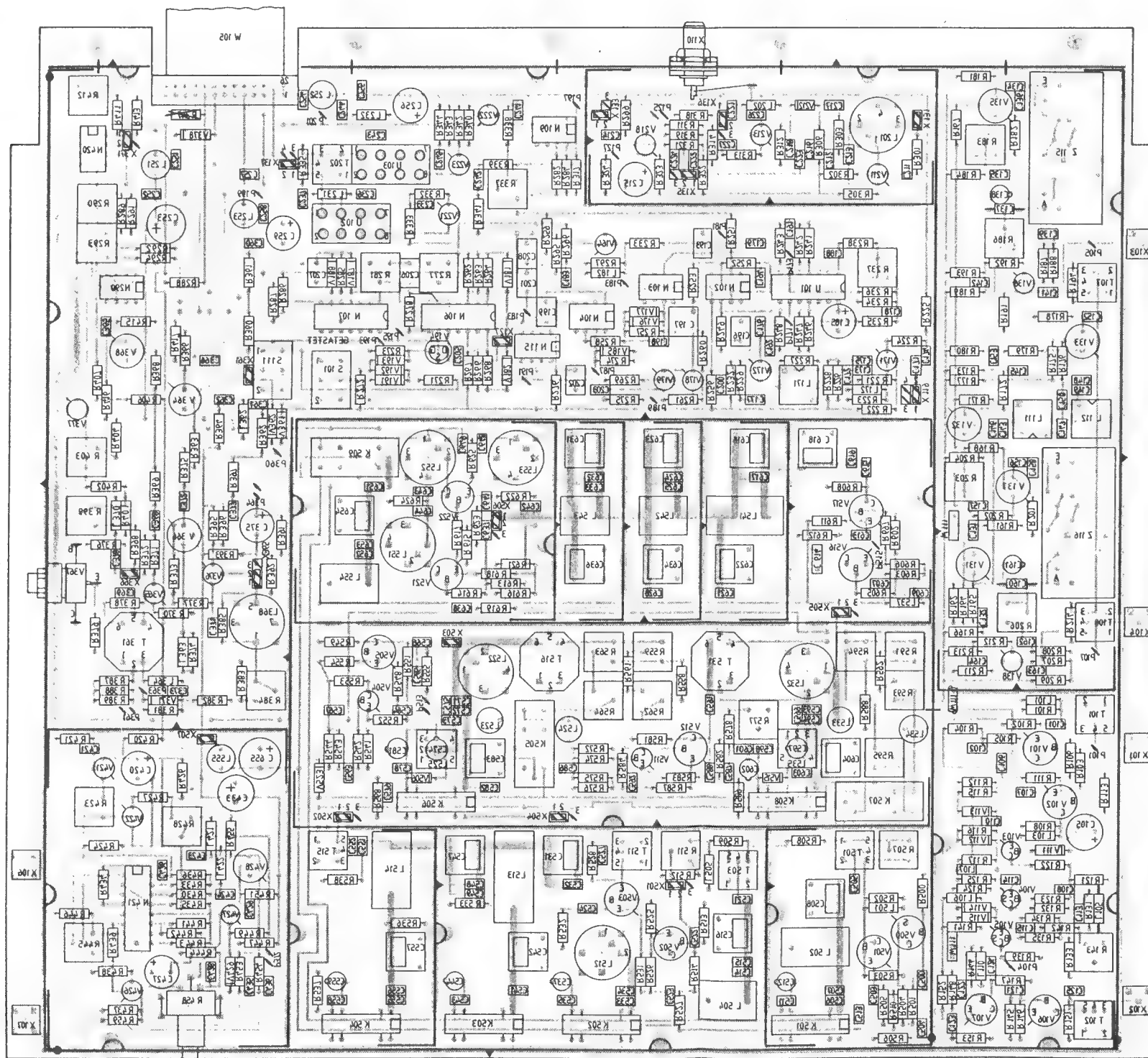


VERKLEINERUNG



ACHTUNG EGB!
Elektronisch gefährdete
Bauelemente erfordern eine
besondere Handhabung
ATTENTION ESD!
Electrostatic sensitive
devices require a special
handling

C	40163	04.88	RP	Maße ohne Toleranzangabe	Maßstab	1 : 1	Benennung	Z	
D	40163	9.88	ST		Halbzeug	Werkstoff			
				2KGH	Tag	Name	ZF-TEIL / VIDEOVERSTÄRKER		
				Bearb.	04.88	RP			
				Gepr.					
				Norm					
						Zeichn. Nr.	821.7518.01	2	
				ROHDE & SCHWARZ					
And. Zust.	Anderungs- Mitteilung	Tag	Name	zu Gerat	EMF	reg. V.	821.4019 V	erste Z.	821.5573



Ansicht und Leitungsführung Lötseite
View of tracks on solder side

Verb. N106.9 - R278



VERKLEINERUNG

C 40163 04.88 RP D 40163 9.88 ST	Maßstab 1 : 1 Zeichnungsart	Benennung ZF-TEIL / VIDEOVERSTÄRKER	Z
ZKGH Tag Bezeichnung 04.88 RP Norm	Zeichnungsart Benennung ZF-TEIL / VIDEOVERSTÄRKER	Benennung ZF-TEIL / VIDEOVERSTÄRKER	Z
And. List Änderungs Mittelung	Zeichnungsart Benennung ZF-TEIL / VIDEOVERSTÄRKER	Benennung ZF-TEIL / VIDEOVERSTÄRKER	Z

Thema: N106.9



ACHTUNG: EGB!
Elektrostatisch gefährdete
Bauelemente erfordern eine
besondere Handhabung.
ATTENTION ESD!
Electrostatic sensitive
devices require a special
handling.

ROHDE & SCHWARZ
EMF

821.7518.01

821.4019 V 821.5573

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C101	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C102	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C105	CE 47UF-10+50% 40V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7142	ROEDERST	EK 00 CB 247 G	
C106	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C107	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C108	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C110	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C113	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C114	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C115	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C121	CC 100PF+-2%6X9NPD CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C122	CC 39PF+-2%4X5NPD CAPACITOR	CC 087.6493	VALVO	2222 678 10399	
C123	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C124	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C125	CC 2,2PF+-0,25PF3X4NPD CAPACITOR	CC 087.6341	VALVO	2222 678 09228	
C131	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C132	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C134	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C135	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C136	CC 15PF+-2%3X4NPD CAPACITOR	CC 087.6441	VALVO	2222 678 10159	
C137	CC 8,2PF+-0,25PF3X4N750 CAPACITOR TRIMMWERT	CC 087.6770	VALVO	2222 678 57828	
C138	CT 7 PF N470 F.GEDR.SCH DISC TRIMMER	CT 066.8022	STETTNER	5S-TRIKO-04 3,5/10	
C139	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C141	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C142	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C143	CC 39PF+-2%4X5N150 CAPACITOR	CC 087.6664	VALVO	2222 678 34399	
C145	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C146	CC 33PF+-2%4X5NPD CAPACITOR	CC 087.6487	VALVO	2222 678 10339	
C147	CC 1,5PF+-0,25PF63V NPD CAPACITOR	CC 092.7220	STETTNER	EGPZ 2.5 3X4 NPD 63V	
C148	CC 39PF+-2%4X5NPD CAPACITOR	CC 087.6493	VALVO	2222 678 10399	
C149	CC 39PF+-2%4X5N150 CAPACITOR	CC 087.6664	VALVO	2222 678 34399	
C150	CC 8,2PF+-0,25PF3X4NPD CAPACITOR	CC 087.6412	VALVO	2222 678 09828	
C152	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C153	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C156	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C157	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C158	CC 10PF+-0,25PF3X4NPD CAPACITOR	CC 087.6429	VALVO	2222 678 09109	
C160	CC 5,6PF+-0,25PF3X4N750 CAPACITOR	CC 087.6758	VALVO	2222 678 57568	
<div> <div>Äl</div> <div>Datum Date</div> </div>		<div> <div>Schaltteilliste für Parts list for</div> <div>ED ZF-TEIL/VIDEOVERST.</div> </div>		<div> <div>Sachnummer Stock Nr.</div> <div>821.7518.01 SA</div> </div>	<div> <div>Blatt Page</div> <div>1+</div> </div>
<div> <div>ROHDE & SCHWARZ</div> </div>					

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C161	TRIMMWERT CT 7 PF N470 F.GEDR.SCH DISC TRIMMER	CT 066.8022	STETTNER	5S-TRIKO-04 3,5/10	
C162	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C163	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C164	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C171	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C172	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C173	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229	
C174	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C175	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C176	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C177	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C178	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C179	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C183	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C185	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D	
C188	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C191	CC 47PF+-2%5X6NPO CAPACITOR	CC 087.6506	VALVO	2222 678 10479	
C192	CC 47PF+-2%5X6NPO CAPACITOR	CC 087.6506	VALVO	2222 678 10479	
C193	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%	
C194	CC 3.3PF+-0,25PF3X4NPO CAPACITOR	CC 087.6364	VALVO	2222 678 09338	
C196	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%	
C197	CK 680PF+-1%63V6,3X11 KP PLASTIC-FOIL CAPACITOR	CK 283.1676	SIEMENS	B33531-A5681-F	
C198	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C199	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%	
C200	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C201	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%	
C202	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%	
C203	CC 47PF+-2%5X6NPO CAPACITOR	CC 087.6506	VALVO	2222 678 10479	
C205	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C206	CK 10NF+-5%63V5RM MKT CAPACITOR	CK 099.2869	WIMA	FKS 2/100/0,01UF/5%	
C207	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%	
C208	CK 220NF+-5%63V5RM MKT CAPACITOR	CK 099.2952	WIMA	MKS2/63/0,22UF/5%	
C211	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C212	CC 10PF+-0,25PF3X4NPO CAPACITOR	CC 087.6429	VALVO	2222 678 09109	
C213	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C214	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C215	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D	
C216	CC 22PF+-2%3X4N150 CAPACITOR	CC 087.6635	VALVO	2222 678 34229	

ROHDE & SCHWARZ	Äl	Datum Date	Schalteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	29	0289	ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA	2+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
C217	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C218	CC 12PF+-2%3X4NPO CAPACITOR	CC 087.6435	VALVO	2222 678 10129		
C221	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C222	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C223	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229		
C224	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C226	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C227	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C233	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C236	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C237	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C241	CC 15PF+-2%3X4NPO CAPACITOR	CC 087.6441	VALVO	2222 678 10159		
C242	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C243	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C244	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C245	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C251	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C252	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C253	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D		
C254	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C255	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C256	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB, 310 D		
C257	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C258	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C259	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D		
C360	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C361	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C362	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C365	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472		
C366	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472		
C368	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472		
C369	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C371	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C372	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472		
C373	CC 33PF+-2%4X5NPO CAPACITOR	CC 087.6487	VALVO	2222 678 10339		
C375	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D		
C377	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C378	CC 120PF+-2%6X9NPO CAPACITOR	CC 087.6558	VALVO	2222 678 10121		
C420	CE 10UF -10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 022.7650	ROEDERST	ELKOEK10/63		
ROHDE & SCHWARZ		Äl	Schaltteilliste für		Sachnummer	
		Datum	Parts list for			Stock Nr.
		29	0289	ED ZF-TEIL/VIDEOVERST.		821.7518.01 SA
						Blatt Page 3+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C421	CC 10PF+-0,25PF3X4NPO CAPACITOR	CC 087.6429	VALVO	2222 678 09109	
C423	CC 56PF+-2%5X6NPO CAPACITOR	CC 087.6512	VALVO	2222 678 10569	
C424	CC 47PF+-2%5X6NPO CAPACITOR	CC 087.6506	VALVO	2222 678 10479	
C426	CC 220PF+-2%6X7N750 CAPACITOR	CC 087.6941	VALVO	2222 678 58221	
C427	CE 10UF -10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 022.7650	ROEDERST	ELKOEK10/63	
C428	CC 18PF+-2%3X4NPO CAPACITOR	CC 087.6458	VALVO	2222 678 10189	
C429	CC 8,2PF+-0,25PF3X4NPO CAPACITOR	CC 087.6412	VALVO	2222 678 09828	
C433	CE 47UF-10+50% 40V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7142	ROEDERST	EK 00 CB 247 G	
C435	CC 39PF+-2%4X5NPO CAPACITOR	CC 087.6493	VALVO	2222 678 10399	
C436	CC 39PF+-2%4X5NPO CAPACITOR	CC 087.6493	VALVO	2222 678 10399	
C500	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C503	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C504	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C505	CC 6,8PF+-0,25PF3X4NPO CAPACITOR	CC 087.6406	VALVO	2222 678 09688	
C506	CC 18PF+-2%3X4N150 CAPACITOR	CC 087.6629	VALVO	2222 678 34189	
C507	CC 3,3PF+-0,25PF3X4NPO CAPACITOR	CC 087.6364	VALVO	2222 678 09338	
C508	CT 9,3PF NORMAL O/U 4ST AIR-TYPE TRIMMER	CT 025.7215	TRONSER	10 1111 20011	
C511	CC 2,2PF+-0,25PF3X4NPO CAPACITOR NUR VAR/ONLY MOD: 20 21 24 26 27 28	CC 087.6341	VALVO	2222 678 09228	
C511	CC 1PF+-0,25PF3X4P100 CAPACITOR NUR VAR/ONLY MOD: 22 23 25	CC 087.6170	VALVO	2222 678 03108	
C512	CT 7 PF N470 F.GEDR.SCH DISC TRIMMER	CT 066.8022	STETTNER	5S-TRIKO-04 3,5/10	
C513	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C514	CC 18PF+-2%3X4N150 CAPACITOR	CC 087.6629	VALVO	2222 678 34189	
C515	CC 8,2PF+-0,25PF3X4NPO CAPACITOR	CC 087.6412	VALVO	2222 678 09828	
C516	CT 9,3PF NORMAL O/U 4ST AIR-TYPE TRIMMER	CT 025.7215	TRONSER	10 1111 20011	
C521	CC 2,2PF+-0,25PF3X4NPO CAPACITOR	CC 087.6341	VALVO	2222 678 09228	
C522	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C523	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C524	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C527	CC 47PF+-2%5X6NPO CAPACITOR	CC 087.6506	VALVO	2222 678 10479	
C531	CT 2,8PF-30PFMAL O/U 4ST. AIR-TYPE TRIMMER	CT 025.7244	TRONSER	LUFTTR.1011112003000	
C532	CC 15PF+-2%3X4NPO CAPACITOR	CC 087.6441	VALVO	2222 678 10159	
C533	CC 56PF+-2%5X6N150 CAPACITOR	CC 087.6687	VALVO	2222 678 34569	
C534	CC 39PF+-2%4X5NPO CAPACITOR	CC 087.6493	VALVO	2222 678 10399	
C535	CC 10PF+-0,25PF3X4NPO CAPACITOR NUR VAR/ONLY MOD: 20 21 24 26 27 28	CC 087.6429	VALVO	2222 678 09109	
C537	CT 9,5PF N750 LIEG.ABGL.O DISC TRIMMER	CT 065.9690	STETTNER	5S-TRIKO04/4,5/15N75	
C541	CC 12PF+-2%3X4N150 CAPACITOR	CC 087.6606	VALVO	2222 678 34129	

ROHDE & SCHWARZ	Äl	Datum	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	29	0289			
			ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA	4+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C542	CT 11 PF NORMAL 11X12 4ST AIR-TYPE TRIMMER	CT 025.6602	TRONSER	LUFTTR10111125013000	
C543	CC 2,2PF+-0,25PF3X4NPO CAPACITOR NUR VAR/ONLY MOD: 20 21 24 26 27 28	CC 087.6341	VALVO	2222 678 09228	
C543	CC 1PF+-0,25PF3X4P100 CAPACITOR NUR VAR/ONLY MOD: 22 23 25	CC 087.6170	VALVO	2222 678 03108	
C544	CT 3 PF N333 F.GEDR.SCH DISC TRIMMER	CT 066.8045	STETTNER	5STRIK0042,5/5PFN033	
C547	CT 2,8PF-30PFMAL 0/U 4ST. AIR-TYPE TRIMMER	CT 025.7244	TRONSER	LUFTTR.1011112003000	
C548	CC 39PF+-2%4X5NPO CAPACITOR	CC 087.6493	VALVO	2222 678 10399	
C549	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C551	CC 56PF+-2%5X6NPO CAPACITOR	CC 087.6512	VALVO	2222 678 10569	
C552	CC 56PF+-2%5X6NPO CAPACITOR	CC 087.6512	VALVO	2222 678 10569	
C555	CC 18PF+-2%3X4N150 CAPACITOR	CC 087.6629	VALVO	2222 678 34189	
C556	CC 12PF+-2%3X4NPO CAPACITOR	CC 087.6435	VALVO	2222 678 10129	
C557	CT 11 PF NORMAL 11X12 4ST AIR-TYPE TRIMMER	CT 025.6602	TRONSER	LUFTTR10111125013000	
C558	CC 10PF+-0,25PF3X4NPO CAPACITOR	CC 087.6429	VALVO	2222 678 09109	
C559	CT 7 PF N470 F.GEDR.SCH DISC TRIMMER	CT 066.8022	STETTNER	5S-TRIKO-04 3,5/10	
C563	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C564	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C565	CC 15PF+-2%3X4N750 CAPACITOR	CC 087.6806	VALVO	2222 678 58159	
C566	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C567	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C571	CC 39PF+-2%4X5NPO CAPACITOR NUR VAR/ONLY MOD: 20 21 24 25	CC 087.6493	VALVO	2222 678 10399	
C571	CC 47PF+-2%5X6NPO CAPACITOR NUR VAR/ONLY MOD: 26	CC 087.6506	VALVO	2222 678 10479	
C571	CC 56PF+-2%5X6NPO CAPACITOR NUR VAR/ONLY MOD: 22 23 27 28	CC 087.6512	VALVO	2222 678 10569	
C572	CC 47PF+-2%4X5N150 CAPACITOR	CC 087.6670	VALVO	2222 678 34479	
C573	CC 4,7PF+-0,25PF3X4NPO CAPACITOR NUR VAR/ONLY MOD: 20 27	CC 087.6387	VALVO	2222 678 09478	
C573	CC 10PF+-0,25PF3X4NPO CAPACITOR NUR VAR/ONLY MOD: 21	CC 087.6429	VALVO	2222 678 09109	
C573	CC 1,0PF+-0,25PF.63V NPO CAPACITOR NUR VAR/ONLY MOD: 28	CC 092.7207	VITRAMON	VK 24 BA	
C573	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR NUR VAR/ONLY MOD: 22 23	CC 022.0784	VALVO	2222 63051 102	
C574	CT 9,5PF N750 LIEG.ABGL.0 DISC TRIMMER NUR VAR/ONLY MOD: 20 21 26	CT 065.9690	STETTNER	5S-TRIK004/4,5/15N75	
C574	CT 3 PF N333 F.GEDR.SCH DISC TRIMMER NUR VAR/ONLY MOD: 24 25 27	CT 066.8045	STETTNER	5STRIK0042,5/5PFN033	
C575	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR NUR VAR/ONLY MOD: 22 23	CC 022.0784	VALVO	2222 63051 102	
C578	CC 6,8PF+-0,25PF3X4NPO CAPACITOR NUR VAR/ONLY MOD: 20	CC 087.6406	VALVO	2222 678 09688	
ROHDE & SCHWARZ		Äl Datum 29 0289	Schaltteilliste für Parts list for ED ZF-TEIL/VIDEOVERST.		Blatt Page 5+
			Sachnummer Stock Nr. 821.7518.01 SA		

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C578	CC 2,2PF+-0,25PF3X4NPO CAPACITOR NUR VAR/ONLY MOD: 21 22 23	CC 087.6341	VALVO	2222 678 09228	
C578	CC 8,2PF+-0,25PF3X4N750 CAPACITOR NUR VAR/ONLY MOD: 26	CC 087.6770	VALVO	2222 678 57828	
C578	CC 15PF+-2%3X4NPO CAPACITOR NUR VAR/ONLY MOD: 28	CC 087.6441	VALVO	2222 678 10159	
C578	CC 18PF+-2%3X4NPO CAPACITOR NUR VAR/ONLY MOD: 24 25	CC 087.6458	VALVO	2222 678 10189	
C579	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C581	CT 9,5PF N750 LIEG.ABGL.O DISC TRIMMER	CT 065.9690	STETTNER	5S-TRIK004/4,5/15N75	
C582	CC 4,7PF+-0,25PF3X4N750 CAPACITOR	CC 087.6741	VALVO	2222 678 57478	
C583	CT 2,8PF-30PFMAL O/U 4ST. AIR-TYPE TRIMMER	CT 025.7244	TRONSER	LUFTTR.1011112003000	
C586	CC 120PF+-2%6X9NPO CAPACITOR	CC 087.6558	VALVO	2222 678 10121	
C587	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C588	CC 15PF+-2%3X4N750 CAPACITOR	CC 087.6806	VALVO	2222 678 58159	
C591	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C592	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C593	CC 56PF+-2%5X6NPO CAPACITOR NUR VAR/ONLY MOD: 20 21 24 25 26 27 28	CC 087.6512	VALVO	2222 678 10569	
C593	CC 68PF+-2%6X7NPO CAPACITOR NUR VAR/ONLY MOD: 22 23	CC 087.6529	VALVO	2222 678 10689	
C594	CC 56PF+-2%5X6N150 CAPACITOR	CC 087.6687	VALVO	2222 678 34569	
C597	CT 3 PF N333 F.GEDR.SCH DISC TRIMMER NUR VAR/ONLY MOD: 20 21 24 25 26	CT 066.8045	STETTNER	5STRIK0042,5/5PFN033	
C597	CT 9,5PF N750 LIEG.ABGL.O DISC TRIMMER NUR VAR/ONLY MOD: 27 28	CT 065.9690	STETTNER	5S-TRIK004/4,5/15N75	
C598	CC 4,7PF+-0,25PF3X4NPO CAPACITOR NUR VAR/ONLY MOD: 20 21 26	CC 087.6387	VALVO	2222 678 09478	
C598	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR NUR VAR/ONLY MOD: 22 23	CC 022.0784	VALVO	2222 63051 102	
C599	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR NUR VAR/ONLY MOD: 22 23 TRIMMERT	CC 022.0784	VALVO	2222 63051 102	
C601	CC 10PF+-0,25PF3X4N750 CAPACITOR NUR VAR/ONLY MOD: 21 24 25	CC 087.6787	VALVO	2222 678 57109	
C601	CC 4,7PF+-0,25PF3X4N750 CAPACITOR NUR VAR/ONLY MOD: 20 26 27	CC 087.6741	VALVO	2222 678 57478	
C601	CC 5,6PF+-0,25PF3X4N750 CAPACITOR NUR VAR/ONLY MOD: 28	CC 087.6758	VALVO	2222 678 57568	
C602	CT 9,5PF N750 LIEG.ABGL.O DISC TRIMMER	CT 065.9690	STETTNER	5S-TRIK004/4,5/15N75	
C603	CC 27PF+-2%3X4N750 CAPACITOR NUR VAR/ONLY MOD: 20 21 22 23 26 28	CC 087.6835	VALVO	2222 678 58279	
C603	CC 22PF+-2%4X5NPO CAPACITOR NUR VAR/ONLY MOD: 24 25	CC 087.6464	VALVO	2222 678 10229	
C603	CC 18PF+-2%3X4N750 CAPACITOR NUR VAR/ONLY MOD: 27	CC 087.6812	VALVO	2222 678 58189	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	29	0289	ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA	6+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C604	CT 2,8PF-30PFMAL O/U 4ST. AIR-TYPE TRIMMER	CT 025.7244	TRONSER	LUFTTR.1011112003000	
C607	CC 120PF+-2%6X9NPO CAPACITOR	CC 087.6558	VALVO	2222 678 10121	
C609	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C613	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C614	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%	
C615	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C616	CT 9,3PF NORMAL O/U 4ST AIR-TYPE TRIMMER	CT 025.7215	TRONSER	10 1111 20011	
C617	CC 5,6PF+-0,25PF3X4N150 CAPACITOR	CC 087.6564	VALVO	2222 678 33568	
C618	CT 11 PF NORMAL 11X12 4ST AIR-TYPE TRIMMER	CT 025.6602	TRONSER	LUFTTR10111125013000	
C619	CC 3,9PF/0,25PF63V3X5N150 CAPACITOR	CC 099.5545	VALVO	2222 678 33398	
C621	CC 8,2PF+-0,25PF3X4N150 CAPACITOR NUR VAR/ONLY MOD: 20 21 22 23 26 27 28	CC 087.6587	VALVO	2222 678 33828	
C621	CC 12PF+-2%3X4NPO CAPACITOR NUR VAR/ONLY MOD: 24 25	CC 087.6435	VALVO	2222 678 10129	
C622	CT 2,8PF-30PFMAL O/U 4ST. AIR-TYPE TRIMMER	CT 025.7244	TRONSER	LUFTTR.1011112003000	
C623	CT 11 PF NORMAL 11X12 4ST AIR-TYPE TRIMMER	CT 025.6602	TRONSER	LUFTTR10111125013000	
C624	CC 27PF+-2%4X5NPO CAPACITOR	CC 087.6470	VALVO	2222 678 10279	
C625	CC 33PF+-2%4X5N150 CAPACITOR	CC 087.6658	VALVO	2222 678 34339	
C628	CC 18PF+-2%3X4N150 CAPACITOR NUR VAR/ONLY MOD: 20 21 22 23 26 27 28	CC 087.6629	VALVO	2222 678 34189	
C628	CC 27PF+-2%4X5NPO CAPACITOR NUR VAR/ONLY MOD: 24 25	CC 087.6470	VALVO	2222 678 10279	
C631	CT 11 PF NORMAL 11X12 4ST AIR-TYPE TRIMMER	CT 025.6602	TRONSER	LUFTTR10111125013000	
C632	CC 27PF+-2%4X5NPO CAPACITOR NUR VAR/ONLY MOD: 20 21 22 23 26 27 28	CC 087.6470	VALVO	2222 678 10279	
C632	CC 22PF+-2%4X5NPO CAPACITOR NUR VAR/ONLY MOD: 24 25	CC 087.6464	VALVO	2222 678 10229	
C633	CC 27PF+-2%4X5N150 CAPACITOR	CC 087.6641	VALVO	2222 678 34279	
C634	CT 2,8PF-30PFMAL O/U 4ST. AIR-TYPE TRIMMER	CT 025.7244	TRONSER	LUFTTR.1011112003000	
C636	CT 9,3PF NORMAL O/U 4ST AIR-TYPE TRIMMER	CT 025.7215	TRONSER	10 1111 20011	
C637	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C638	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C641	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C642	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C643	CC 47PF+-2%4X5N150 CAPACITOR	CC 087.6670	VALVO	2222 678 34479	
C644	CC 27PF+-2%4X5NPO CAPACITOR	CC 087.6470	VALVO	2222 678 10279	
C648	CC 56PF+-2%5X6N150 CAPACITOR	CC 087.6687	VALVO	2222 678 34569	
C649	CC 12PF+-2%3X4NPO CAPACITOR	CC 087.6435	VALVO	2222 678 10129	
C651	CC 6,8PF+-0,25PF3X4NPO CAPACITOR	CC 087.6406	VALVO	2222 678 09688	
C652	CC 27PF+-2%4X5N150 CAPACITOR	CC 087.6641	VALVO	2222 678 34279	
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für Parts list for	Sachnummer Stock Nr.
		29	0289	ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA
					Blatt Page
					7+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C653	CC 10PF+-0,25PF3X4NP0 CAPACITOR NUR VAR/ONLY MOD: 20 21 24 26 27 28	CC 087.6429	VALVO	2222 678 09109	821.8166
C653	CC 15PF+-2%3X4NP0 CAPACITOR NUR VAR/ONLY MOD: 22 23 25	CC 087.6441	VALVO	2222 678 10159	
C654	CT 11 PF NORMAL 11X12 4ST AIR-TYPE TRIMMER	CT 025.6602	TRONSER	LUFTTR10111125013000	
C655	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D	
K501	SR 12V5300HM1MAL1RH-JC-GE RELAY	SR 083.3183	CLARE	PRME 15.002	
K504	SN 12V 1XU AU-CO MONOSTAB RELAY	SN 063.7083	SDS	RS-12V	
K505	SR 12V5300HM1MAL1RH-JC-GE RELAY	SR 083.3183	CLARE	PRME 15.002	
K506	SN 12V 1XU AU-CO MONOSTAB RELAY	SN 063.7083	SDS	RS-12V	
K507	SR 12V5300HM1MAL1RH-JC-GE RELAY	SR 083.3183	CLARE	PRME 15.002	
K508	SN 12V 1XU AU-CO MONOSTAB RELAY	SN 063.7083	SDS	RS-12V	
K509	LD 3.90UH10%1,000HMO,263A CHOKE	LD 067.2934	DELEVAN	DROSSEL1025-34	
L101	LD 0,82UH10%0,850HMO,420A CHOKE	LD 067.2857	DELEVAN	DROSSEL1025-18	
L103	LD 0,68UH10%0,600HMO,500A CHOKE	LD 067.2840	DELEVAN	DROSSEL1025-16	
L105	LD 0,82UH10%0,850HMO,420A CHOKE	LD 067.2857	DELEVAN	DROSSEL1025-18	
L106	LD 100 UH10%8,000HMO,084A CHOKE	LD 067.3101	DELEVAN	DROSSEL1025-68	
L107	LD 0,68UH10%0,600HMO,500A CHOKE	LD 067.2840	DELEVAN	DROSSEL1025-16	
L110	LD SPULE 210NH 6,5W FE-K COIL	816.9051	COMPONEX	E526HNA-100076	
L111	LD SPULE 210NH 6,5W FE-K COIL	816.9051	COMPONEX	E526HNA-100076	
L112	LD SPULE 210NH 6,5W FE-K COIL	816.9051	COMPONEX	E526HNA-100076	
L171	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20	
L172	LD 0,47UH10%0,350HMO,660A CHOKE	LD 067.2828	DELEVAN	DROSSEL1025-12	
L182	LD SPULE	821.8108			
L201	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL1025-44	
L202	LD 2,20UH10%0,400HMO,415A CHOKE	LD 067.2905	DELEVAN	DROSSEL1025-28	
L231	LD 2,20UH10%0,400HMO,415A CHOKE	LD 067.2905	DELEVAN	DROSSEL1025-28	
L232	LD 3,3UH 2% 1,35A OR14 CHOKE	LD 567.3964	JAHRE	74.11-3R30G	
L251	LD 3,3UH 2% 1,35A OR14 CHOKE	LD 567.3964	JAHRE	74.11-3R30G	
L252	LD 3,3UH 2% 1,35A OR14 CHOKE	LD 567.3964	JAHRE	74.11-3R30G	
L253	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20	
L362	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 067.2740	DELEVAN	DROSSEL1025-94	
L363	LD 1,50UH10%0,220HMO,560A CHOKE	LD 067.2886	DELEVAN	DROSSEL 1025-24	
L364	LD SPULE	821.7547			
L368	LD 6,80UH10%2,000HMO,185A CHOKE	LD 026.4178	DELEVAN	DROSSEL1025-40	
L370	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20	
L421	LD 1,50UH10%0,220HMO,560A CHOKE	LD 067.2886	DELEVAN	DROSSEL 1025-24	
L422	LD 22,0UH10%3,300HMO,114A CHOKE	LD 067.3024	DELEVAN	DROSSEL1025-52	
L501	LC 630NH D9,5H18 COIL	026.8296	STETTNER	KERAMIK-SP 508700453	
L502					

		Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
ROHDE & SCHWARZ						
		29	0289	ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA	8+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
L504	LC 450NH 8WDG D9,5H16 COIL	026.8280	STETTNER	5087.0045.2	821.8166	
L505	LD 0,56UH10% 500HMO,550A CHOKE	LD 067.2834	DELEVAN	DROSSEL1025-14		
L512	LD SPULE	821.7553				
L513	LC 1,10UH 15WDG. D9,5H23 COIL	066.9629	STETTNER	508701630		
L514	LC 630NH D9,5H18 COIL	026.8296	STETTNER	KERAMIK-SP 508700453	821.8166	
L522	LD SPULE	821.7560				
L523	LD 470NH 20% 2,2A OR096 CHOKE	026.3120	JAHRE	74.11-R470M		
L524	LD 680NH 20% 1,6A OR18 CHOKE	026.3136	JAHRE	74.11-R68M		
L525	LD SPULE NUR VAR/ONLY MOD: 22 23	821.7576			821.8166	
L532	LD SPULE	821.7560				
L533	LD 330NH 20% 2,4A OR072 CHOKE	026.3113	JAHRE	74.11-R330M		
L534	LD 1,5UH 20% 0,9 A OR6 CHOKE NUR VAR/ONLY MOD: 20 21 24 25 26 27 28	026.3159	JAHRE	74.11-1R50M		
L534	LD 1,0UH 20% 0,93A OR29 CHOKE NUR VAR/ONLY MOD: 22 23	026.3142	JAHRE	74.11-1R00M	821.8166 821.8166 821.8166	
L535	LD SPULE NUR VAR/ONLY MOD: 22 23	821.7582				
L537	LD 4,70UH10% 1,200HMO,239A CHOKE	LD 067.2940	DELEVAN	DROSSEL1025-36		
L541	LC 630NH D9,5H18 COIL	026.8296	STETTNER	KERAMIK-SP 508700453		
L542	LC 230NH 5WDG D9,5H13 COIL	288.1851	STETTNER	87-5840A-01	821.8166 821.8166 821.8166	
L543	LC 230NH 5WDG D9,5H13 COIL	288.1851	STETTNER	87-5840A-01		
L551	LD SPULE	821.7599				
L552	LD SPULE	821.7601				
L553	LD SPULE	821.7618			821.8166 821.8166 821.8166	
L554	LC 450NH 8WDG D9,5H16 COIL	026.8280	STETTNER	5087.0045.2		
L555	LD 5,6UH 2% 1,15A OR33 CHOKE	LD 087.0389	JAHRE	74.11-5R60+2%		
N102	BO LF157J BIFET OPAMP OPERATIONAL AMPLIFIER	BO 343.1530	MOTOROLA	LF157J	821.8166 821.8166 821.8166	
N103	BO LM318JG H.S.R.OPAMP OPERATIONAL AMPLIFIER	BO 280.2459	TEXAS INST	LM318JG		
N104	BJ TL604CP 2X ANALGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP		
N106	BO TLO74IN 4XFET OPAMP OPERATIONAL AMPLIFIER	568.7528	TEXAS INST	TLO74IN		
N107	BO TLO74IN 4XFET OPAMP OPERATIONAL AMPLIFIER	568.7528	TEXAS INST	TLO74IN		
N109	BO TLO72ACP 2XFET OPAMP OPERATIONAL AMPLIFIER	340.6054	TEXAS INST	TLO72ACP		
N115	BJ TL604CP 2X ANALGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP		
N290	BJ TL604CP 2X ANALGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP		
N420	BJ TL604CP 2X ANALGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP		
N421	AK CA3183AE 5XN TR.ARRAY TRANSISTOR ARRAY	AK 249.8594	RCA	CA3183AE		
R101	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D		
R102	RL 0,35W 3,92KOHM+-1%TK50 RESISTOR	RL 083.1039	RESISTA	MK2		
R103	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R104	RL 0,35W 56,2 OHM+-1%TK50 RESISTOR	RL 082.9571	DRALORIC	SMA0207/56,20HM-F-D		
R105	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/1500HM-F-D		
R106	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/150HM-F-D		
ROHDE & SCHWARZ		Äl Datum	Schaltteilliste für Parts list for		Sachnummer Stock Nr.	Blatt Page
		29 0289	ED ZF-TEIL/VIDEOVERST.		821.7518.01 SA	9+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R108	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R111	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/221OHM-F-D	
R112	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/221OHM-F-D	
R113	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R115	RL 0,35W4,75 OHM+-1%TK50 METALFILMRESISTOR	RL 099.8021	RESISTA	MK2 4,75 OHM 1% TK50	
R116	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/475OHM-F-D	
R117	RL 0,35W 681 OHM+-1%TK50 RESISTOR	RL 083.0490	DRALORIC	SMA0207/681OHM-F-D	
R121	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R122	RL 0,35W 3,92KOHM+-1%TK50 RESISTOR	RL 083.1039	RESISTA	MK2	
R123	RL 0,35W 39,2 OHM+-1%TK50 RESISTOR	RL 082.9420	DRALORIC	SMA0207/39,2OHM-F-D	
R124	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/332OHM-F-D	
R125	RL 0,35W4,75 OHM+-1%TK50 METALFILMRESISTOR	RL 099.8021	RESISTA	MK2 4,75 OHM 1% TK50	
R131	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R132	RL 0,35W18,20 OHM+-1%TK50 RESISTOR	RL 082.9107	DRALORIC	SMA0207/18,2OHM-F-D	
R133	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R134	RL 0,35W 3,92KOHM+-1%TK50 RESISTOR	RL 083.1039	RESISTA	MK2	
R135	RL 0,35W 39,2 OHM+-1%TK50 RESISTOR	RL 082.9420	DRALORIC	SMA0207/39,2OHM-F-D	
R139	RL 0,35W 182 OHM+-1%TK50 RESISTOR	RL 083.0010	DRALORIC	SMA0207/182OHM-F-D	
R141	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/332OHM-F-D	
R142	RL 0,35W27,40 OHM+-1%TK50 RESISTOR	RL 082.9271	DRALORIC	SMA0207/27,4OHM-F-D	
R143	RS 0,5W50 OHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7861	BOURNS	3386F-1-500	
R144	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR	RL 082.9636	DRALORIC	SMA0207/68,1OHM-F-D	
R145	RL 0,35W 56,2 OHM+-1%TK50 RESISTOR	RL 082.9571	DRALORIC	SMA0207/56,2OHM-F-D	
R146	RL 0,35W 825 OHM+-1%TK50 RESISTOR	RL 082.2502	DRALORIC	SMA 0207/825OHM-F-C	
R147	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R148	RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461	DRALORIC	SMA0207/562OHM-F-D	
R151	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/221OHM-F-D	
R152	RL 0,35W 82,5 OHM+-1%TK50 RESISTOR	RL 082.9707	DRALORIC	SMA0207/82,5OHM-F-D	
R153	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/15OHM-F-D	
R161	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R162	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R164	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR	RL 083.0926	DRALORIC	SMA0207/2,74K-F-D	
R165	RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461	DRALORIC	SMA0207/562OHM-F-D	
R166	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,5OHM-F-D	
R167	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR	RL 082.9636	DRALORIC	SMA0207/68,1OHM-F-D	
R168	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR	RL 082.9636	DRALORIC	SMA0207/68,1OHM-F-D	
R171	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR	RL 082.9636	DRALORIC	SMA0207/68,1OHM-F-D	
R172	RL 0,35W 121 OHM+-1%TK50 RESISTOR	RL 082.9859	DRALORIC	SMA0207/121OHM-F-D	
R173	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/150OHM-F-D	

		Al	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
ROHDE & SCHWARZ			29 0289	ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA	10+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
R175	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR	RL 082.2190	DRALORIC	SMA0207/5,62K-F-C		
R176	RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMA0207/22,10HM-F-D		
R177	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR	RL 082.2190	DRALORIC	SMA0207/5,62K-F-C		
R178	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R179	RL 0,35W 121 OHM+-1%TK50 RESISTOR	RL 082.9859	DRALORIC	SMA0207/1210HM-F-D		
R180	RL 0,35W 121 OHM+-1%TK50 RESISTOR	RL 082.9859	DRALORIC	SMA0207/1210HM-F-D		
R181	RL 0,35W 182 OHM+-1%TK50 RESISTOR	RL 083.0010	DRALORIC	SMA0207/1820HM-F-D		
R182	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/100HM-F-D		
R183	RS 0,5W100 OHM+-10%10X10X CERMET POTENTIOMETER T	RS 247.7984	BOURNS	3386F-1-101		
R184	RL 0,35W 182 OHM+-1%TK50 RESISTOR	RL 083.0010	DRALORIC	SMA0207/1820HM-F-D		
R186	RS 0,5W2KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7884	BOURNS	3386F-1-202		
R187	RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMA0207/22,10HM-F-D		
R188	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR	RL 082.2190	DRALORIC	SMA0207/5,62K-F-C		
R189	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR	RL 082.2190	DRALORIC	SMA0207/5,62K-F-C		
R191	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R192	RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMA0207/22,10HM-F-D		
R193	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/4750HM-F-D		
R194	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D		
R201	RL 0,35W 182 OHM+-1%TK50 RESISTOR	RL 083.0010	DRALORIC	SMA0207/1820HM-F-D		
R202	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/150HM-F-D		
R203	RS 0,5W50 OHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7861	BOURNS	3386F-1-500		
R204	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D		
R206	RS 0,5W2KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7884	BOURNS	3386F-1-202		
R207	RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMA0207/22,10HM-F-D		
R208	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR	RL 082.2190	DRALORIC	SMA0207/5,62K-F-C		
R209	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR	RL 082.2190	DRALORIC	SMA0207/5,62K-F-C		
R211	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R212	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/100HM-F-D		
R213	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/4750HM-F-D		
R214	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D		
R221	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R222	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R223	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/4750HM-F-D		
R224	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR	RL 082.9636	DRALORIC	SMA0207/68,10HM-F-D		
R225	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D		
R226	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R227	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,20HM-F-D		
R228	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R229	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D		
ROHDE & SCHWARZ		AI	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		29	0289	ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA	11+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R232	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/332OHM-F-D	
R233	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R234	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R235	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R236	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R237	RS 0,5W50 OHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7861	BOURNS	3386F-1-500	
R238	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/221OHM-F-D	
R241	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/475OHM-F-D	
R242	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R243	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R246	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/475OHM-F-D	
R247	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R248	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R249	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R251	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,2OHM-F-D	
R252	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R253	RL 0,35W 243 OHM+-1%TK50 DEPOS.-CARBON RESISTOR	RL 083.0126	DRALORIC	SMA0207/243OHM-F-D	
R256	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,2OHM-F-D	
R257	RL 0,35W 18,2KOHM+-1%TK50 RESISTOR	RL 083.1480	DRALORIC	SMA/207/18,2K-F-C	
R258	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R259	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R260	RL 0,35W 475 KOHM+-1%TK50 RESISTOR	RL 083.2593	DRALORIC	SMA0207/475K-F-C	
R261	RL 0,35W 475 KOHM+-1%TK50 RESISTOR	RL 083.2593	DRALORIC	SMA0207/475K-F-C	
R262	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR	RL 083.1351	DRALORIC	SMA0207/12,1K-F-D	
R263	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R264	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/332OHM-F-D	
R266	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R267	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR	RL 083.1351	DRALORIC	SMA0207/12,1K-F-D	
R268	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/332OHM-F-D	
R269	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R271	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R272	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R273	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R274	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R275	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R276	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R277	RS 0,5W2KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7884	BOURNS	3386F-1-202	
R278	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R281	RS 0,5W10KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7903	BOURNS	3386F-1-103	

ROHDE & SCHWARZ	AI	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	29	0289	ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA	12+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
R282	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R284	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R285	RL 0,35W 1,50MOHM+-1%TK50 METALFILMRESISTOR	RL 099.8138	RESISTA	MK2 1,50MOHM 1% TK50		
R286	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R287	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R288	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R289	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R290	RS 0,5W 10KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7903	BOURNS	3386F-1-103		
R291	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R292	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R293	RS 0,5W 10KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7903	BOURNS	3386F-1-103		
R294	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R295	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R296	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/475OHM-F-D		
R297	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R299	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R301	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R302	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R303	RL 0,35W 681 OHM+-1%TK50 RESISTOR	RL 083.0490	DRALORIC	SMA0207/681OHM-F-D		
R305	RL 0,35W 681 OHM+-1%TK50 RESISTOR	RL 083.0490	DRALORIC	SMA0207/681OHM-F-D		
R306	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R311	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R312	RL 0,35W 56,2 OHM+-1%TK50 RESISTOR	RL 082.9571	DRALORIC	SMA0207/56,2OHM-F-D		
R313	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,5OHM-F-D		
R314	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/221OHM-F-D		
R317	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R318	RL 0,35W 56,2 OHM+-1%TK50 RESISTOR	RL 082.9571	DRALORIC	SMA0207/56,2OHM-F-D		
R319	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D		
R321	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,2OHM-F-D		
R322	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R323	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/221OHM-F-D		
R324	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R332	RL 0,35W 4,75 OHM+-1%TK50 METALFILMRESISTOR	RL 099.8021	RESISTA	MK2 4,75 OHM 1% TK50		
R333	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/221OHM-F-D		
R335	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/221OHM-F-D		
R337	RS 0,5W 100 OHM+-10%10X10X CERMET POTENTIOMETER T	RS 247.7984	BOURNS	3386F-1-101		
R338	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,2OHM-F-D		
R339	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R340	RL 0,35W 4,75 OHM+-1%TK50 METALFILMRESISTOR	RL 099.8021	RESISTA	MK2 4,75 OHM 1% TK50		
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für	Sachnummer	Blatt
			Date	Parts list for	Stock Nr.	Page
		29	0289	ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA	13+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R341	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R342	RL 0,35W4,75 OHM+-1%TK50 METALFILMRESISTOR	RL 099.8021	RESISTA	MK2 4,75 OHM 1% TK50	
R343	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D	
R344	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,20HM-F-D	
R360	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/100HM-F-D	
R361	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/3320HM-F-D	
R362	RL 0,35W 1,50KOHM+-1%TK50 RESISTOR	RL 083.0732	DRALORIC	SMA0207/1,50K-F-D	
R363	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R364	RL 0,35W 3,92KOHM+-1%TK50 RESISTOR	RL 083.1039	RESISTA	Mx2	
R366	RL 0,35W 274 OHM+-1%TK50 RESISTOR	RL 083.0178	DRALORIC	SMA0207/2740HM-F-D	
R368	RL 0,35W 82,5 OHM+-1%TK50 RESISTOR	RL 082.9707	DRALORIC	SMA0207/82,50HM-F-D	
R369	RL 0,35W 39,2 OHM+-1%TK50 RESISTOR	RL 082.9420	DRALORIC	SMA0207/39,20HM-F-D	
R370	RL 0,35W 681 OHM+-1%TK50 RESISTOR	RL 083.0490	DRALORIC	SMA0207/6810HM-F-D	
R371	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R372	RL 0,35W 6,19KOHM+-1%TK50 RESISTOR	RL 082.2283	DRALORIC	SMA0207/6,19K-F-C	
R373	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/1500HM-F-D	
R374	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,50HM-F-D	
R375	RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMA0207/22,10HM-F-D	
R376	RL 0,35W 56,2 OHM+-1%TK50 RESISTOR	RL 082.9571	DRALORIC	SMA0207/56,20HM-F-D	
R377	RL 0,35W7,50 OHM+-1%TK50 METALFILMRESISTOR	RL 099.8073	RESISTA	MK2 7,50 OHM 1% TK50	
R378	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/3320HM-F-D	
R379	RL 0,35W2,21 OHM+-1%TK50 METALFILMRESISTOR	RL 099.7948	RESISTA	MK2 2,21 OHM 1% TK50	
R381	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R382	RL 0,35W 182 OHM+-1%TK50 RESISTOR	RL 083.0010	DRALORIC	SMA0207/1820HM-F-D	
R383	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/4750HM-F-D	
R384	RS 0,5W2KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7884	BOURNS	3386F-1-202	
R385	RL 0,35W 1,82KOHM+-1%TK50 RESISTOR	RL 082.2277	DRALORIC	SMA0207/1,82K-F-C	
R387	RL 0,35W18,20 OHM+-1%TK50 RESISTOR	RL 082.9107	DRALORIC	SMA0207/18,20HM-F-D	
R388	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR	RL 082.9636	DRALORIC	SMA0207/68,10HM-F-D	
R389	RL 0,35W18,20 OHM+-1%TK50 RESISTOR	RL 082.9107	DRALORIC	SMA0207/18,20HM-F-D	
R391	RL 0,35W 75,0 OHM+-1%TK50 RESISTOR	RL 082.9665	DRALORIC	SMA0207/750HM-F-D	
R392	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R393	RL 0,35W 82,5KOHM+-1%TK50 RESISTOR	RL 082.2302	DRALORIC	SMA0207/82,5K-F-C	
R395	RL 0,35W 825 OHM+-1%TK50 RESISTOR	RL 082.2502	DRALORIC	SMA 0207/8250HM-F-C	
R396	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R397	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/3320HM-F-D	
R398	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/150HM-F-D	
R399	RS 0,5W100 OHM+-10%10X10X CERMET POTENTIOMETER T	RS 247.7984	BOURNS	3386F-1-101	
R401	RL 0,35W 750 OHM+-1%TK50 RESISTOR	RL 082.2360	DRALORIC	SMA0207/7500HM-F-C	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	29	0289	ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA	14+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthaltene in contained in
R402	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/332OHM-F-D	
R403	RS 0,5W50KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7910	BOURNS	3386F-1-503	
R404	RL 0,35W 8,25KOHM+-1%TK50 RESISTOR	RL 083.1239	DRALORIC	SMA0207/8,25K-F-D	
R406	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R407	RL 0,35W 619 OHM+-1%TK50 RESISTOR	RL 083.0478	DRALORIC	SMA0207/619OHM-F-D	
R411	RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMA0207/22,10HM-F-D	
R412	RS 0,5W50 OHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7861	BOURNS	3386F-1-500	
R413	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R415	RL 0,35W27,40 OHM+-1%TK50 RESISTOR	RL 082.9271	DRALORIC	SMA0207/27,40HM-F-D	
R416	RL 0,35W 162 OHM+-1%TK50 RESISTOR	RL 082.9971	DRALORIC	SMA0207/162OHM-F-D	
R417	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR	RL 082.9636	DRALORIC	SMA0207/68,10HM-F-D	
R420	RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMA0207/22,10HM-F-D	
R421	RL 0,35W 392 OHM+-1%TK50 RESISTOR	RL 082.2183	DRALORIC	SMA0207/392K-F-C	
R423	RS 0,5W50 OHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7861	BOURNS	3386F-1-500	
R424	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R426	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R427	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/10OHM-F-D	
R428	RS 0,5W500 OHM+-10%10X10X CERMET POTENTIOMETER T	RS 247.7878	BOURNS	3386F-1-501	
R430	RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMA0207/22,10HM-F-D	
R433	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R434	RL 0,35W 56,2 OHM+-1%TK50 RESISTOR	RL 082.9571	DRALORIC	SMA0207/56,20HM-F-D	
R435	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R436	RL 0,35W 1,50KOHM+-1%TK50 RESISTOR	RL 083.0732	DRALORIC	SMA0207/1,50K-F-D	
R437	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR	RL 083.0926	DRALORIC	SMA0207/2,74K-F-D	
R438	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R439	RL 0,35W12,10 OHM+-1%TK50 RESISTOR	RL 082.8930	DRALORIC	SMA0207/12,10HM-F-D	
R441	RL 0,35W 1,82KOHM+-1%TK50 RESISTOR	RL 082.2277	DRALORIC	SMA0207/1,82K-F-C	
R442	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R443	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/221OHM-F-D	
R444	RL 0,35W 182 OHM+-1%TK50 RESISTOR	RL 083.0010	DRALORIC	SMA0207/182OHM-F-D	
R445	RS 0,5W20 OHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 087.7548	BOURNS	3386F-1-200	
R446	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/15OHM-F-D	
R447	RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMA0207/22,10HM-F-D	
R449	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R451	RL 0,35W 182 OHM+-1%TK50 RESISTOR	RL 083.0010	DRALORIC	SMA0207/182OHM-F-D	
R453	RL 0,35W 75,0 OHM+-1%TK50 RESISTOR	RL 082.9665	DRALORIC	SMA0207/75OHM-F-D	
R454	RL 0,35W 75,0 OHM+-1%TK50 RESISTOR	RL 082.9665	DRALORIC	SMA0207/75OHM-F-D	
R455	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R458	RS 1K 10% LIN 0,5W DEPOS.-CARBON POTENTIOMET	RS 087.7319	DRALORIC	61CDS 1KOHM10%LIN.	
ROHDE & SCHWARZ		Äl Datum	Schaltteilliste für Parts list for		Blatt Page
		29 0289	ED ZF-TEIL/VIDEOVERST.		821.7518.01 SA 15+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R459	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/3320HM-F-D	
R500	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR	RL 082.2190	DRALORIC	SMA0207/5,62K-F-C	
R501	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R502	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D	
R503	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R504	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/1500HM-F-D	
R505	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/1500HM-F-D	
R506	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,20HM-F-D	
R507	RS 0,5W500 OHM+-10%10X10X CERMET POTENTIOMETER T	RS 247.7878	BOURNS	3386F-1-501	
R508	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R509	RL 0,35W 274 OHM+-1%TK50 RESISTOR	RL 083.0178	DRALORIC	SMA0207/2740HM-F-D	
R510	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/100HM-F-D	
R511	RS 0,5W100 OHM+-10%10X10X CERMET POTENTIOMETER T	RS 247.7984	BOURNS	3386F-1-101	
R512	RL 0,35W 182 OHM+-1%TK50 RESISTOR	RL 083.0010	DRALORIC	SMA0207/1820HM-F-D	
R513	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR	RL 082.2190	DRALORIC	SMA0207/5,62K-F-C	
R514	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R525	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R526	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/1500HM-F-D	
R527	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/100HM-F-D	
R528	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D	
R531	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/1500HM-F-D	
R532	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,5QHM-F-D	
R533	RL 0,35W 182 OHM+-1%TK50 RESISTOR	RL 083.0010	DRALORIC	SMA0207/1820HM-F-D	
R536	RL 0,35W 22,1KOHM+-1%TK50 RESISTOR	RL 083.1545	DRALORIC	SMA/207/22,1K-F-C	
R537	RL 0,35W 3,92KOHM+-1%TK50 RESISTOR	RL 083.1039	RESISTA	MK2	
R538	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R541	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR	RL 083.1351	DRALORIC	SMA0207/12,1K-F-D	
R542	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR	RL 082.9636	DRALORIC	SMA0207/68,10HM-F-D	
R543	RL 0,35W 15,0KOHM+-1%TK50 RESISTOR	RL 083.1400	DRALORIC	SMA0207/15K-F-D	
R544	RL 0,35W3,32 OHM+-1%TK50 METALFILMRESISTOR	RL 099.7983	RESISTA	MK2 3,32 OHM 1% TK50	
R548	RL 0,35W 182 OHM+-1%TK50 RESISTOR	RL 083.0010	DRALORIC	SMA0207/1820HM-F-D	
R549	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R551	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R552	RL 0,35W18,20 OHM+-1%TK50 RESISTOR	RL 082.9107	DRALORIC	SMA0207/18,20HM-F-D	
R553	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D	
R554	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/100HM-F-D	
R555	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D	
R558	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R559	RS 0,5W500 OHM+-10%10X10X CERMET POTENTIOMETER T	RS 247.7878	BOURNS	3386F-1-501	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	29	0289	ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA	16+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalt. in contained in
R561	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR NUR VAR/ONLY MOD: 20 21 26 28	RL 082.9507	DRALORIC	SMA0207/47,5OHM-F-D	
R561	RL 0,35W 121 OHM+-1%TK50 RESISTOR NUR VAR/ONLY MOD: 22 23	RL 082.9859	DRALORIC	SMA0207/121OHM-F-D	
R562	RS 0,5W200 OHM+-10%10X10X CERMET POTENTIOMETER T	RS 087.7554	BOURNS	3386F-1-201	
R563	RS 0,5W500 OHM+-10%10X10X CERMET POTENTIOMETER T	RS 247.7878	BOURNS	3386F-1-501	
R564	RS 0,5W50 OHM+-10%10X10X5 CERMET POTENTIOMETER T NUR VAR/ONLY MOD: 25 26	RS 247.7861	BOURNS	3386F-1-500	
R564	RS 0,5W100 OHM+-10%10X10X CERMET POTENTIOMETER T NUR VAR/ONLY MOD: 20 21 22 23	RS 247.7984	BOURNS	3386F-1-101	
R564	RS 0,5W200 OHM+-10%10X10X CERMET POTENTIOMETER T NUR VAR/ONLY MOD: 24 27 28	RS 087.7554	BOURNS	3386F-1-201	
R568	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR NUR VAR/ONLY MOD: 22 23	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R572	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR	RL 083.1351	DRALORIC	SMA0207/12,1K-F-D	
R574	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR	RL 082.9636	DRALORIC	SMA0207/68,1OHM-F-D	
R575	RL 0,35W 15,0KOHM+-1%TK50 RESISTOR	RL 083.1400	DRALORIC	SMA0207/15K-F-D	
R576	RL 0,35W3,32 OHM+-1%TK50 METALFILM-RESISTOR	RL 099.7983	RESISTA	MK2 3,32 OHM 1% TK50	
R577	RS 0,5W200 OHM+-10%10X10X CERMET POTENTIOMETER T	RS 087.7554	BOURNS	3386F-1-201	
R578	RL 0,35W27,40 OHM+-1%TK50 RESISTOR	RL 082.9271	DRALORIC	SMA0207/27,4OHM-F-D	
R581	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R582	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R583	RL 0,35W18,20 OHM+-1%TK50 RESISTOR	RL 082.9107	DRALORIC	SMA0207/18,2OHM-F-D	
R584	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/221OHM-F-D	
R587	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/10OHM-F-D	
R588	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R589	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR NUR VAR/ONLY MOD: 23	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R591	RS 0,5W500 OHM+-10%10X10X CERMET POTENTIOMETER T	RS 247.7878	BOURNS	3386F-1-501	
R592	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/10OHM-F-D	
R593	RS 0,5W100 OHM+-10%10X10X CERMET POTENTIOMETER T NUR VAR/ONLY MOD: 20 21 25	RS 247.7984	BOURNS	3386F-1-101	
R593	RS 0,5W50 OHM+-10%10X10X5 CERMET POTENTIOMETER T NUR VAR/ONLY MOD: 24 26 28	RS 247.7861	BOURNS	3386F-1-500	
R593	RS 0,5W200 OHM+-10%10X10X CERMET POTENTIOMETER T NUR VAR/ONLY MOD: 22 23 27	RS 087.7554	BOURNS	3386F-1-201	
R594	RS 0,5W500 OHM+-10%10X10X CERMET POTENTIOMETER T	RS 247.7878	BOURNS	3386F-1-501	
R595	RS 0,5W200 OHM+-10%10X10X CERMET POTENTIOMETER T NUR VAR/ONLY MOD: 20 21 24 25 27 28	RS 087.7554	BOURNS	3386F-1-201	
R595	RS 0,5W500 OHM+-10%10X10X CERMET POTENTIOMETER T NUR VAR/ONLY MOD: 22 23 26	RS 247.7878	BOURNS	3386F-1-501	
R602	RL 0,35W 18,2KOHM+-1%TK50 RESISTOR	RL 083.1480	DRALORIC	SMA/207/18,2K-F-C	
R603	RL 0,35W 6,81KOHM+-1%TK50 RESISTOR	RL 082.2560	DRALORIC	SMA 0207/6,81K-F-C	
ROHDE & SCHWARZ		Äl Datum Date	Schaltteilliste für Parts list for		Blatt Page
		29 0289	ED ZF-TEIL/VIDEOVERST.		821.7518.01 SA 17+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R605	RL 0,35W 39,2 OHM+-1%TK50 RESISTOR	RL 082.9420	DRALORIC	SMAO207/39,20HM-F-D	
R606	RL 0,35W 82,5 OHM+-1%TK50 RESISTOR	RL 082.9707	DRALORIC	SMAO207/82,50HM-F-D	
R607	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMAO207/100/HM-F-D	
R608	RL 0,35W 182 OHM+-1%TK50 RESISTOR	RL 083.0010	DRALORIC	SMAO207/1820HM-F-D	
R611	RL 0,35W 39,2 OHM+-1%TK50 RESISTOR	RL 082.9420	DRALORIC	SMAO207/39,20HM-F-D	
R612	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMAO207/2210HM-F-D	
R613	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR	RL 082.2190	DRALORIC	SMAO207/5,62K-F-C	
R614	RL 0,35W 22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMAO207/22,10HM-F-D	
R615	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMAO207/3320HM-F-D	
R616	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMAO207/10K-F-D	
R617	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMAO207/100/HM-F-D	
R618	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMAO207/1500HM-F-D	
R619	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMAO207/100/HM-F-D	
R621	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMAO207/100HM-F-D	
R622	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMAO207/1500HM-F-D	
R623	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMAO207/1500HM-F-D	
R624	RL 0,35W 274 OHM+-1%TK50 RESISTOR	RL 083.0178	DRALORIC	SMAO207/2740HM-F-D	
R625	RL 0,35W 392 OHM+-1%TK50 RESISTOR	RL 082.2183	DRALORIC	SMAO207/392K-F-C	
S101	SK SCHIEBESCHALTER 2MAL21 SLIDE SWITCH	SK 063.7490	SIEMENS	C42315-A60-A24	
S111	SK SCHIEBESCHALTER 2MAL21 SLIDE SWITCH	SK 063.7490	SIEMENS	C42315-A60-A24	
T101	LU UEBERTRAGER	821.7624			821.8166
T102	LU UEBERTRAGER	821.7630			821.8166
T107	LU UEBERTRAGER	821.7624			821.8166
T108	LU UEBERTRAGER	821.7624			821.8166
T202	LU UEBERTRAGER	821.7624			821.8166
T361	LU UEBERTRAGER	821.7647			821.8166
T501	LU UEBERTRAGER	821.7630			821.8166
T503	LU UEBERTRAGER	821.7630			821.8166
T511	LU UEBERTRAGER	821.7630			821.8166
T515	LU UEBERTRAGER	821.7630			821.8166
T516	LU UEBERTRAGER	821.7653			821.8166
T531	LU UEBERTRAGER	821.7653			821.8166
U101	BL MC12040L PLL-PHASE-DET PHASE FREQUENCY DETECTOR	BL 302.5877	MOTOROLA	MC12040L	
U102	BM SRA1 MIXER 0.5GHZ MIXER	BM 207.3465	MINICIRCUIT	SRA1	
U103	BM SRA1H MIXER 0.5GHZ MIXER	BM 252.5234	MCL	SRA1H	
V101	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V102	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V103	AK BCY79IX P 45V 200MA TRANSISTOR	AK 010.3777	VALVO	BCY79IX	
V104	AK BFY90 N 15V 25MA TRANSISTOR	AK 010.4550	VALVO	BFY90	
V105	AK BFY90 N 15V 25MA TRANSISTOR	AK 010.4550	VALVO	BFY90	
V106	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V107	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V111	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	29	0289	ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA	18+

Kennz. Comp.No.	Benennung Designation		Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
V112	AD 1N4448	75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V113	AE 5082-3080	100V PIN PIN DIODE	AE 012.8718	HEWLETT-P.	5082-3080	
V114	AE 5082-3080	100V PIN PIN DIODE	AE 012.8718	HEWLETT-P.	5082-3080	
V115	AE 5082-3080	100V PIN PIN DIODE	AE 012.8718	HEWLETT-P.	5082-3080	
V131	AK BFW16A	N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V132	AK BFW16A	N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V133	AK BFW16A	N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V135	AK BFW16A	N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V136	AK BFY90	N 15V 25MA TRANSISTOR	AK 010.4550	VALVO	BFY90	
V137	AK BFW16A	N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V138	AK BFY90	N 15V 25MA TRANSISTOR	AK 010.4550	VALVO	BFY90	
V164	AK 2N2369A	N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A	
V171	AK 2N2369A	N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A	
V172	AK 2N2369A	N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A	
V176	AD 1N4448	75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V177	AD 1N4448	75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V178	AK BCY79IX	P 45V 200MA TRANSISTOR	AK 010.3777	VALVO	BCY79IX	
V179	AK BSX29	P 12V 200MA TRANSISTOR	010.3031	SGS	BSX29	
V181	AD 1N4448	75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V182	AD 1N4448	75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V185	AD 1N4448	75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V187	AD 1N4448	75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V188	AD 1N4448	75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V191	AD 1N4448	75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V192	AE BZX79/C8V2	0.5W ZDI ZENER DIODE	AE 012.2490	AEG	BZX55/C8V2 GEGURTET	
V193	AD 1N4448	75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V194	AM BF245B	N-D 30V JFET FET	AM 010.8627	VALVO	BF245B	
V211	AK 2N2369A	N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A	
V212	AE BB909B	25/ 3PF CDI TUNING DIODE	AE 092.9600	VALVO	BB909B	
V213	AK 2N2369A	N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A	
V218	AK 2N2369A	N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A	
V221	AK 2N2369A	N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A	
V222	AK 2N2369A	N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A	
V223	AK 2N2369A	N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A	
V361	AE BA483	BER.SCH.DI.UHF DIODE	AE 568.2290	VALVO	BA483	
V362	AE BA483	BER.SCH.DI.UHF DIODE	AE 568.2290	VALVO	BA483	
V364	AK BFW16A	N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V365	AK BCY79IX	P 45V 200MA TRANSISTOR	AK 010.3777	VALVO	BCY79IX	
V366	AK 2N5160	P 40V 400MA TRANSISTOR	010.3060	MOTOROLA	2N5160	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	29	0289	ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA	19+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
V367	AK BFR94 N 25V 150MA TRANSISTOR	AK 117.8398	VALVO	BFR94	
V368	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V371	AE 5082-2800 SCHOTTKY DIODE	AE 012.9066	HEWLETT-P.	5082-2800	
V376	AK 2N2222A N 40V 800MA TRANSISTOR	AK 010.5405	VALVO	2N2222A	
V377	AK BCY79IX P 45V 200MA TRANSISTOR	AK 010.3777	VALVO	BCY79IX	
V378	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V421	AK BCY59IX N 45V 200MA TRANSISTOR	AK 010.5163	VALVO	BCY59IX	
V422	AK BCY79IX P 45V 200MA TRANSISTOR	AK 010.3777	VALVO	BCY79IX	
V426	AK BFX48 P 30V 100MA TRANSISTOR	AK 010.3202	SGS	BFX48	
V427	AK BFX48 P 30V 100MA TRANSISTOR	AK 010.3202	SGS	BFX48	
V428	AK BSY56 N 80V 500MA TRANSISTOR	AK 010.5511	INTERMETAL	BSY56	
V429	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V500	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V501	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V502	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V503	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V504	AK BSX29 P 12V 200MA TRANSISTOR	010.3031	SGS	BSX29	
V505	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V506	AE BA483 BER.SCH.DI.UHF DIODE	AE 568.2290	VALVO	BA483	
V511	NUR VAR/ONLY MOD: 22 23 AK BSX29 P 12V 200MA TRANSISTOR	010.3031	SGS	BSX29	
V512	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V515	AE BA483 BER.SCH.DI.UHF DIODE	AE 568.2290	VALVO	BA483	
V516	NUR VAR/ONLY MOD: 22 23 AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V517	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V521	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V522	AK BFW16A N 40V 150MA TRANSISTOR	AK 010.4644	VALVO	BFW16A	
V523	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
W105	DX BANDKABEL	821.8150			
W111	DX KABEL	821.7676			
X101 ..104	FJ EINBAUSTECKER SYST.SMC CONNECTOR	FJ 082.6895	SUHNER	82 SMC-50-O-1	
X106	FJ EINBAUSTECKER SYST.SMC CONNECTOR	FJ 082.6895	SUHNER	- 82 SMC-50-O-1	
X107	FJ EINBAUSTECKER SYST.SMC CONNECTOR	FJ 082.6895	SUHNER	82 SMC-50-O-1	
X110	FJ EINBAUSTECKER SYST.SMC PLUG	FJ 070.0151	RADIALL	112554	
X119B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X127B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X131B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X133B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X135B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	29	0289	ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA	20+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
X136B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X137B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X361B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X365B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X366B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X371B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X501B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X502B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X503B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X504B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X505B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X506B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
X507B	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG	FP 342.1895	BERG	76264-101	
Z115	EP 33,4MHZ-BANDP., B:100K 33,4MHZ-BANDPASS, BW:100K	821.7699	KVG	XF-334S01	
Z116	EP 33,1578MHZ-BANDP.B100K 33,1578MHZ-BANDPASS	821.7682	KVG	XF-332S01	
					- ENDE -

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	29	0289	ED ZF-TEIL/VIDEOVERST.	821.7518.01 SA	21-



ROHDE & SCHWARZ

Unternehmensbereich
Rundfunk- und Fernsehtechnik

Circuit Description

TV Test Receiver

EMFT Synthesizer

821.9710

Table of Contents

1	Synthesizer	
1.1	Storage and Output of the Division Factor	1.1
1.2	Parallel/Serial Conversion	1.1
1.3	Data Ooutput to the RF Section	1.2
1.4	IEC-bus Operation (Option)	1.2
1.5	Channel Display	1.2
1.6	Flashing Oscillator	1.2
2	TV Channel Selection	
2.1	Direct Selection of TV Channel:	1.3
2.1.1	Up Steps - Units	
2.1.2	Down Steps - Units	
2.1.3	Up Steps - Tens	
2.1.4	Down Steps - Tens	
2.1.5	Carry Over	
2.1.6	Adress Selection	
2.1.7	Continuous Channel Selection	
2.2	Search	1.4
2.2.1	1st Search Start	
2.2.2	Search Start	
2.2.3	Search Stop	
2.2.4	Search End	
2.2.5	Voltage Failure	
3	Mode Switchover	
3.1	Selection of RF Input Attenuation 0/10/20 dB	1.5
3.2	Atomatic RF Attenuation	1.5
3.3	Selection of the RF Input 50 /75 /IF	1.5
3.4	Normal/Special Channel/Offset Channel Switchover	1.6
3.5	Adjacent-channel Suppression	1.6
3.6	Demodulator Mode	1.6
3.7	INTERNAL / EXTERNAL Switchover	1.7
3.7.1	INTERNAL Mode	
3.7.2	EXTERNAL Mode	

1 Synthesizer

See 821.9710 S, sheet 3

The synthesizer delivers the following signals required for the channel setting to the RF section:

- * 14-bit serial data word for the division factor of the synthesizer IC
- * Clock signal for pulsing
- * SEL signal as read command
- * Selection of respective RF selection (8 ranges)
- * Selection of optimum oscillator (4 ranges)
- * 0.2 ms acknowledgement signal for the external connector (X3)

The synthesizer board can be remote controlled either via an IEC bus adapter (X116) (option) or parallel via the EXTERNAL connector (X3). The keys UP, DOWN, tens, units can be used to directly enter the channels. The channel selection changes automatically in steps as long as one of the keys is pressed. The channel is output on two 7-segment LED displays. The display flashes if a channel is selected which is not included in the pattern (e.g. channel 13 with standard B/G). The RF section is disabled at the same time. The operating states are displayed on LEDs, operation is carried out using short-stroke keys.

1.1 Storage and Output of the Division Factor

The main part of the circuit is an 8-Kbyte EPROM. The corresponding division factor is contained in two bytes in this memory for each channel, special channel or offset channel, for the TV standard B/G or M. 3 bit (8 ranges) of a further byte are used for the bandpass selector (RF preselection). The oscillator selection (4 ranges) is derived from this.

1.2 Parallel/Serial Conversion

Each channel occupies 3 addresses in the memory, i.e. 3 byte. Addresses of illegal channels are not stored. 14 bits of the 2 bytes are required to make up the serial data word for the division factor. The 8-bit output bus is applied to multiplexer D59. The information on the sequence in which the address contents are to be combined from the EPROM into a serial data word is obtained by the multiplexer from counter D61 at the control inputs D59 pins 9/10/11. The synthesizer chip in the RF section must be assigned a new data word with the current data if the channel setting is changed or when the unit is switched on. The counter D61 must start at "0". This is achieved when switching on as a "switch-on reset" via D69E and D60D or, when changing the channel, using the clock. The counter clock is determined by oscillator D60A/B.

Counter D61 handles the operating sequence:

CT6 first has a Low signal which is inverted by D54 and applied as a read instruction "SEL-H" to the synthesizer IC D345 in the RF section. CT1 has the highest frequency and is used as a clock signal. CT2, 3 and 4 control the parallel/serial conversion. The most significant byte is output first. The least significant byte is read out of the EPROM when CT5 is High.

1.3 Data Output to the RF Section

CT6 and D61 are applied to A9 of the EPROM. Thus output of the 3rd byte can be made to the 1-out-of-10 decoder D82 and the bandpass can be selected (N30, 31). 8 outputs are required for bandpass selection. One of the 4 tuning oscillators is selected according to the receiver range by a logic operation (D87) on these 8 outputs (see tables in Appendix). The clock oscillator D60A/B is stopped via D54E. The SEL signal is now Low since CT6 remains High until the next time the channel is changed. The synthesizer IC has stored the data for division selection during normal operation and the serial data line has no function.

1.4 IEC-bus Operation (Option)

The IEC-bus board (option) is used as an adapter between the IEC bus and the parallel EXTERNAL interface. The connection is made via X116. Frequency value can also be entered directly in which case the data are applied from the IEC-bus board via the MOS switches D79 (bandpass selection) and D78 (division factor). The internal data lines are isolated at the same time by switches D77 (bandpass selection) and D76 (division factor).

1.5 Channel Display

The EPROM address is selected for the tens and units with 4 bits each at address ports A0 to A7. This data bus is also connected in parallel to the BCD/7-segment decoders D10/D11 on the display board 821.9862. The driver stages are included in D10 and D11.

1.6 Flashing Oscillator

This function is handled by D84B/C/D and D85A/B. The display is flashed if a TV channel is selected which is not in the channel pattern. In this case, the 5th bit in the 3rd byte, and thus port 04 of the EPROM, is Low. Low is inverted by D84D and applied to D85A.1. D85A.3 becomes Low which causes the RF section to be switched off via D85D and the flashing oscillator to be enabled via D84B.4.

The channel digits change continuously during the search. Additional flashing would make the display unreadable. Therefore a Low signal is applied to D85A.2 in this case and the flashing oscillator is stopped. If a channel selection key is pressed, the flashing oscillator is also inhibited by a High signal at D84B.3.

2 TV Channel Selection

2.1 Direct Selection of TV Channel:

2.1.1 Up Steps - Units

A Low signal is applied to D30A.2 by pressing key S12. D30A.9 becomes High and R36/C15 generate a clock pulse for the units counter D51.

2.1.2 Down Steps - Units

A Low signal is applied to D24C.9 by pressing key S13. D24C and D28A/B constitute a monoflop and store the Low signal. Storage is necessary to switch the counter D51 over to downwards counting. The Low signal is applied to D30A, the further sequence corresponds to "Up Steps - Units".

2.1.3 Up Steps - Tens

A Low signal is applied to D30B.3 by pressing key S10. D30B.6 becomes High and R35/C14 generate a clock pulse for the tens counter D5.

2.1.4 Down Steps - Tens

A Low signal is applied to D24B.6 by pressing key S11. D24B and D23E/D constitute a monoflop and store the Low signal. The Low signal is linked to the Low signal from "Down Steps - Units" since the tens counter D50 must also be switched over to downwards counting in the case of a carry over.

2.1.5 Carry Over

The carry over following the 9th units position is present at D51.7 (Carry Out) as a High signal and is applied to D50.5 (Carry In) via D20D/D21D.

2.1.6 Address Selection

The respective counter value is present as 4-bit information at the outputs. This information is applied to the EPROM via the MOS switches D52 (tens) and D53 (units) and selects the address corresponding to the TV channel. The counters are switched over to parallel loading by means of PE High and do not clock. The counters are disabled in the event of a power failure or external mode by feedback of the outputs to the inputs. The counter ICs D50 and D51 have a battery back-up and store the set TV channel in the event of a power failure. The two counters can be reset via the Reset inputs (see 1st search start). The flipflops D64 and D65 operate as intermediate memories for the address selection data from the EXTERNAL connector (X3).

2.1.7 Continuous Channel Selection

If one of the channel selection keys S10 to S13 is pressed continuously, a Low signal is present at one of the inputs of the 8-channel NAND gate D32. The output of D32 becomes High and thus starts the keys repetition oscillator D31A/D23F at the end of the time constant R27, C12. The oscillator then delivers the pulses for selection of the channels in steps.

2.2 Search

2.2.1 1st Search Start

The counter D50/D51 is reset to zero when the search key is pressed following a power-up or a voltage failure. The search can also be reset to zero during normal operation if:

- * any channel selection key and
- * the SL key are pressed.

In this case D41.A1 changes briefly from High to Low since all inputs have High signals at the moment when the SL key is pressed. The Low pulse at D41A.1 is inverted and D13B is set. This results in a reset pulse at D13B.13 which resets the counter D50/D51. The High signal at D13B.13 is returned to the reset input for the duration of the time constant R58/C25. The reset pulse is then extended so that the start from "0" can clearly be recognized.

2.2.2 Search Start

A High pulse is applied to D38B.6 when key S14 is pressed and the flipflop is set. The search oscillator D37C/D35D outputs a pulse to D30A.8. The search commences upwards in unit steps starting from the last set channel.

2.2.3 Search Stop

If a receivable transmitter is found, the search stop detector N15D/N29D generates a High signal. The response threshold is determined by R39. The voltage divider R39/R40 determines the reference value of comparator N29D. The actual value is obtained from the motherboard and is a measure of the RF input voltage. N15D is used for decoupling. The High signal resets the D flipflop D40A with the next clock. The Low signal at D37B.5 resets D38B. A Low signal at D37C.8 stops the search oscillator. If another key is pressed during the search - apart from SAW and attenuation - the search is also stopped via D35B, D37A and D35C.

2.2.4 Search End

The first transmitted byte (H byte) signifies the search end in addition to the division factor. This information is read into the D flipflop D40B via port 07 during the change from the first to second byte. The search is stopped via D32, D35B and D37A.

2.2.5 Voltage Failure

If the 12-V voltage drops below approx. 7 V during operation, V21 turns off and the line "VOLTAGE FAILURE" is Low. This Low signal has the following functions:

- * Disabling of D14 and D15A disconnects keys S18 and S20 - S22.
- * D47F.12 is Low in the event of a voltage failure. The keys S17 - S22 then have no function.
- * Storage of counter value D50/51 by means of "PE = High".
- * Disconnection of address counter outputs to prevent discharging of back-up battery.
- * Resetting of D75 is prevented via D68C/D.
- * Flipflops D64, D65 and D66 are disabled via D70B.
- * A clock output to flipflops D64, D65 and D66 is prevented via D70D/D68B.

All these measures, together with battery back-up of the corresponding ICs, ensure that the operating conditions are retained in the event of a power failure.

3 Mode Switchover

3.1 Selection of RF Input Attenuation 0/10/20 dB

The input signal can be attenuated by 10 or 20 dB if required. The counter D44 is clocked by key S19. The fourth counter output is connected to the reset input. CT0 is High after switching on. The following are driven via D42.C:

- * Driver N25A for the 0-dB indication
- * Drivers N25C/B/D for switchover of the RF attenuators in the RF section
- * Driver D47E for the 0-dB message to the remote interface.

If the key 0/10/20 dB is pressed once, CT0 of D44 changes to Low and CT1 to High. The further sequence is analogous to that with the setting "0 dB". If the key 0/10/20 dB is pressed again, CT2 changes to High, CT0 and CT1 are Low. The level display is corrected via the voltage divider R90, R91 and R93 in the 10-dB and 20-dB positions so that addition of the selected attenuation to the displayed value is not necessary.

3.2 Automatic RF Attenuation

If key S21 is pressed, the 10-dB attenuation is automatically selected for RF input signals $>70 \text{ dB}\mu\text{V}$ and the 20-dB attenuation for signals $>80 \text{ dB}\mu\text{V}$. N19B/C operate as comparators. The reference value for the 20-dB attenuation is determined by R75 and for the 10-dB attenuation by R84. The actual value is the V_{IN} signal from the motherboard which is then decoupled by N15A and applied to the positive inputs of N15B/C. The outputs of N15B/C deliver a 2-bit signal which is converted into a 1-out-of-3 signal by the gates D31B, D36F/D.../D29C/D. Automatic selection of the attenuation is disabled during a search via inputs D31B.5 and D29C.8 (basic setting 0 dB). The MOS switches D17B/C/D are driven by flipflop D11A. External attenuation selection signals (Low) are inverted by D36B/C/D and are used for damping selection in external mode. The drive of the MOS switches is linked such that only one switch group can close at a time.

3.3 Selection of the RF Input 50/75/IF

The two D flipflops D10A/B are driven simultaneously at the C1 input by key S18. D10A/B are also connected as a flipflop so that three functions can be selected cyclically using one key.

- 50 Ω :** D10A.2 and D10B.12 are High. The RF High signal is decoupled by D22A, is applied to the IF input selector via X109.18 and enables the BCD/1-out-of-10 decoder D82 via D85D. The 50- Ω High signal is inverted by D23A and linked with the RF High signal by D24D into a 50- Ω High signal. The amplifier N27B is thus driven via D86A and the 50- Ω LED lights up.
- 75 Ω :** D10A.2 remains High, D10B.12 becomes Low. Thus D24D.11 becomes Low, N27C and N28A/B are driven, the 75- Ω LED lights up and the RF input impedance is switched to 75 Ω by a Low signal at X115.33.
- IF:** D10A.2 becomes Low, thus D22A.2 is also Low and the BCD/1-out-of-10 decoder is disabled via D85D which leads to switching off of the RF section. The IF LED H19 is driven via N27A.

3.4 Normal/Special Channel/Offset Channel Switchover

The D flipflops D12B and D13A are driven simultaneously at the C1 input by key D17. D12B and D13A are also connected as a flipflop so that three functions can be selected using one key. The switching sequence is normal channel - special channel - offset channel.

Normal channel:

The standard TV bands I, III and VHF are selected and D13A.1 is High. The High signal is applied to D54B via D15D, is inverted and drives the address line A10 of the EPROM. N32C is driven at the same time and the channel indication lights up.
(A10 = Low; A11 = Low: normal channels)

Special channel:

The special channel range includes the upper and lower special channel range and the hyperband range S1 to S37. D12B.13 is High and D13A.1 is Low. Since D31D.13 is Low, the High signal from D12B.13 is inverted by each of D54A, D31D and D54C and thus drives the address line A11 of the EPROM with Low. The Low signal of D13A.1 is inverted by D54B and drives the address line A10 of the EPROM with High.
(A10 = High; A11 = Low: special channels)

Offset channel:

The customer-specific programmed channels can be selected. D12B.13 is Low, and thus D31D.12 is High. D31D.13 must be High so that D54C.6 can become High.
(A10 = High; A11 = Low: offset channel)

Selection logic output:

	N/S, offset	S/offset
Normal channel	H	X
Special channel	L	H
Offset channel	L	L

3.5 Adjacent-channel Suppression

A SAW filter can be connected using key S20 to increase the IF selection. The D flipflop D11B is driven at C1 by S20. The Low signal of D11B.13 is applied to D24A.1 in position "Adjacent-channel suppression". D23B.4 becomes Low if SAW is selected or if the search is activated. The Low signal from D23B.4 drives the operational amplifiers N28D (SAW connection in RF section) and N29A for the LED "SAW ON".

3.6 Demodulator Mode

In order to improve the S/N ratio, the IF gain can be reduced and a higher RF input voltage can then be applied. The D flipflop at C1 is driven by key S22. A Low signal is present at D12A.1 and D22C.6 in DEMOD setting (front-panel key). This Low signal drives the operational amplifiers N29B (gain reduction in RF section) and N29C for the indicator. The indication is corrected via D54F at the same time so that adding of the reduction to the indicated value is not necessary.

3.7 INTERNAL/EXTERNAL Switchover

See 821.9710 S, sheet 4

Switchover from INTERNAL to EXTERNAL by the signal line INT/EXT takes place from the remote interface via connectors X3.1, X2.30 or X116 (IEC-bus adapter).

3.7.1 INTERNAL Mode

A High signal is present at input D69B. This High signal sets the flipflop D75 via D69F.

The following signals are available:

Signal line	Meaning
INT/EXT: "L"	<p>supplied from D69B.4, and</p> <ul style="list-style-type: none"> * activates the keys S17 to S22 via D47F * disables the NAND gates D70C and D68D * opens the MOS switches D16A-D and D17A * opens the MOS switches D43A-C via D31C/D36E.
INT/EXT: "H"	<p>supplied from D69F.12, and</p> <ul style="list-style-type: none"> * closes the MOS switches D14A-D and D15A via D20A/D21A. The outputs of flipflops D10A/B, D11A/B and D12A are thus connected.
INT: "H"	<p>supplied from the Q output D75, and</p> <ul style="list-style-type: none"> * closes the MOS switch D67A. The clock is thus applied to counter D61 with a change in channel from D30C via D69C, D60C, D69D and D60D.
INT: "L"	<p>supplied from D70A.3, and</p> <ul style="list-style-type: none"> * enables the channel number counters D50/51 with a delay by the time constant R132/C50 (VOLTAGE FAILURE). * D21E inverts this signal and closes the MOS switches D52/D53 and D15C/D and a) enables address access to the EPROM for the counters D50/51 b) connects the output of flipflop D12B/D13A.

EMFT CIRCUIT DESCRIPTION SYNTHESIZER

3.7.2 EXTERNAL Mode

The unit is switched to EXTERNAL mode by a Low signal via connectors X3.1, X2.30 or X116.1 (IEC bus adapter). The signal lines INT and EXT retain their states when switching from INTERNAL to EXTERNAL until a clock is received from the remote interface, i.e. the counters D50/D51 still retain access to the EPROM. Thus the remote interface must not deliver a BCD-coded channel number if, apart from channel selection, any other remote control function is required.

The following signals are available:

Signal line	Meaning
INT/EXT: "H"	<p>supplied from D69B.4, and</p> <ul style="list-style-type: none"> * disables the keys S17 to S22 via D47F * enables resetting of D75 to EXTERNAL via D70C and D68D when a clock arrives from the remote interface * closes the MOS switches D16A-D and D17A and thus enables operation of the functions from the remote interface according to keys S18 and S20-22 * closes the MOS switches D43A-C via D31C/D36E and thus enables remote selection of the RF input attenuation 0/10/20 dB.
INT/EXT: "L"	<p>supplied from D69F.12, and</p> <ul style="list-style-type: none"> * opens the MOS switches D14A-D and D15A via D20A/D21A following the time constant R132/C50 (VOLTAGE FAILURE). The internal keys S18 and S20-S22 are thus isolated.
INT: "H" together with a clock from the remote interface	<p>supplied from the Q output D75, and</p> <ul style="list-style-type: none"> * closes the MOS switch D67B. Thus an external clock can reset the counter D61 via D69C, D60C D69D and D60D * with a clock Low from the remote interface, D37A and D35C set the flipflop D38A via D15B and prepare the search for a start from "0".
INT: "L" together with a clock from the remote interface	<p>supplied from D70A.3, and</p> <ul style="list-style-type: none"> * disables the channel number counters D50/D51. <p>D21E inverts this signal, opens the MOS switches D52/D53, D15C/D and</p> <ul style="list-style-type: none"> a) enables address access to the EPROM for D64/D65 which accept channel number information from the remote interface b) isolates the key NORMAL/SPECIAL CHANNEL/OFFSET CHANNEL and thus enables remote control of this function via D66.

Summary of circuit documents for synthesizer

Block diagram 821.4019 S, sheet 4 in Register 3

Basic circuit diagram 821.9710 S, sheet 3.1

Circuit diagram 821.9710 S, sheet 1

Key flip-flops, clock generator for address counter, keyrepetition oscillator, identification of search stop

Circuit diagram 821.9710 S, sheet 2

Search, RF attenuation selection

Circuit diagram 821.9710 S, sheet 3

Channel number counter, EPROM, parallel/serial converter for read-in of division factor

Circuit diagram 821.9710 S, sheet 4

External/parallel input of channel number, normal/special/offset channel input, monitoring of supply voltage, clock generator for channel number, display driver

Circuit diagram 821.9710 S, sheet 5

Input of division factor from IEC bus, bandpass selection, oscillator selection (4-fold), oscillator for channel number display

Circuit diagram 821.9710 S, sheet 6

Interface X1 to display board, X109 to motherboard

Circuit diagram 821.9710 S, sheet 7

Interfaces X115 to RF section, X116 to IEC-bus interface, X3 to external/parallel

Circuit diagram 821.9710 S, sheet 8

Pin assignment of ICs for supply voltage

Board layouts 821.9710, sheet 2 and 3

Parts lists 821.9710 SA

Circuit diagram 821.9862 S, sheet 1

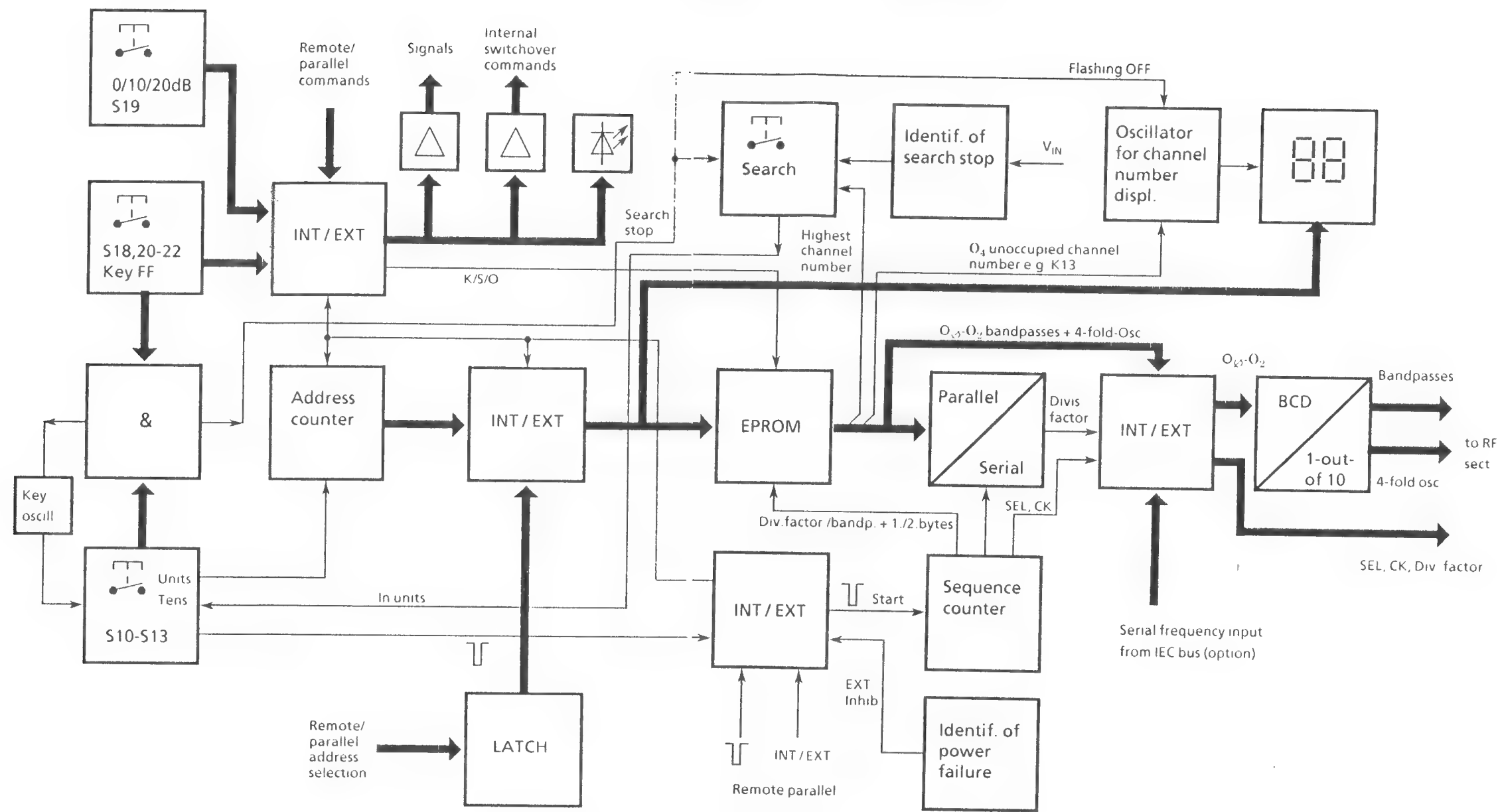
Display board, LEDs, operating keys, channel number display

Board layout 821.9862, sheet 2

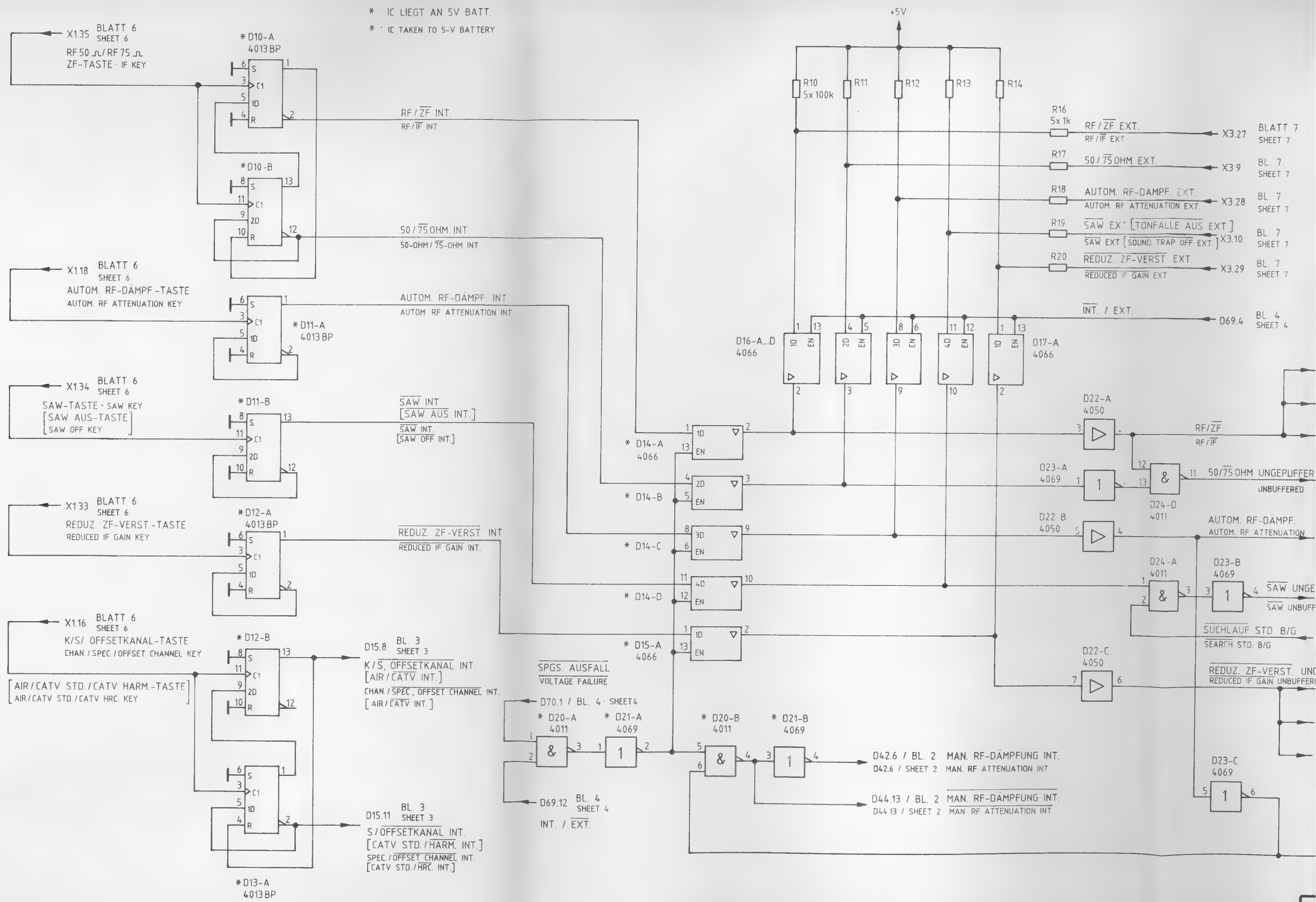
Display board

Parts lists 821.9862 SA

Display board



Basic circuit diagram Synthesizer



BLATT 7
SHEET 7
BL. 7
SHEET 7
BL. 7
SHEET 7
BL. 7
SHEET 7
BL. 4
SHEET 4

D85.12 / BL. 5 · SHEET 5
X109.18 / BL. 6 · SHEET 6
N27.2 / BL. 4 · SHEET 4

1M UNGEPUFFERT
UNBUFFERED
N28.3 / BL. 4 · SHEET 4

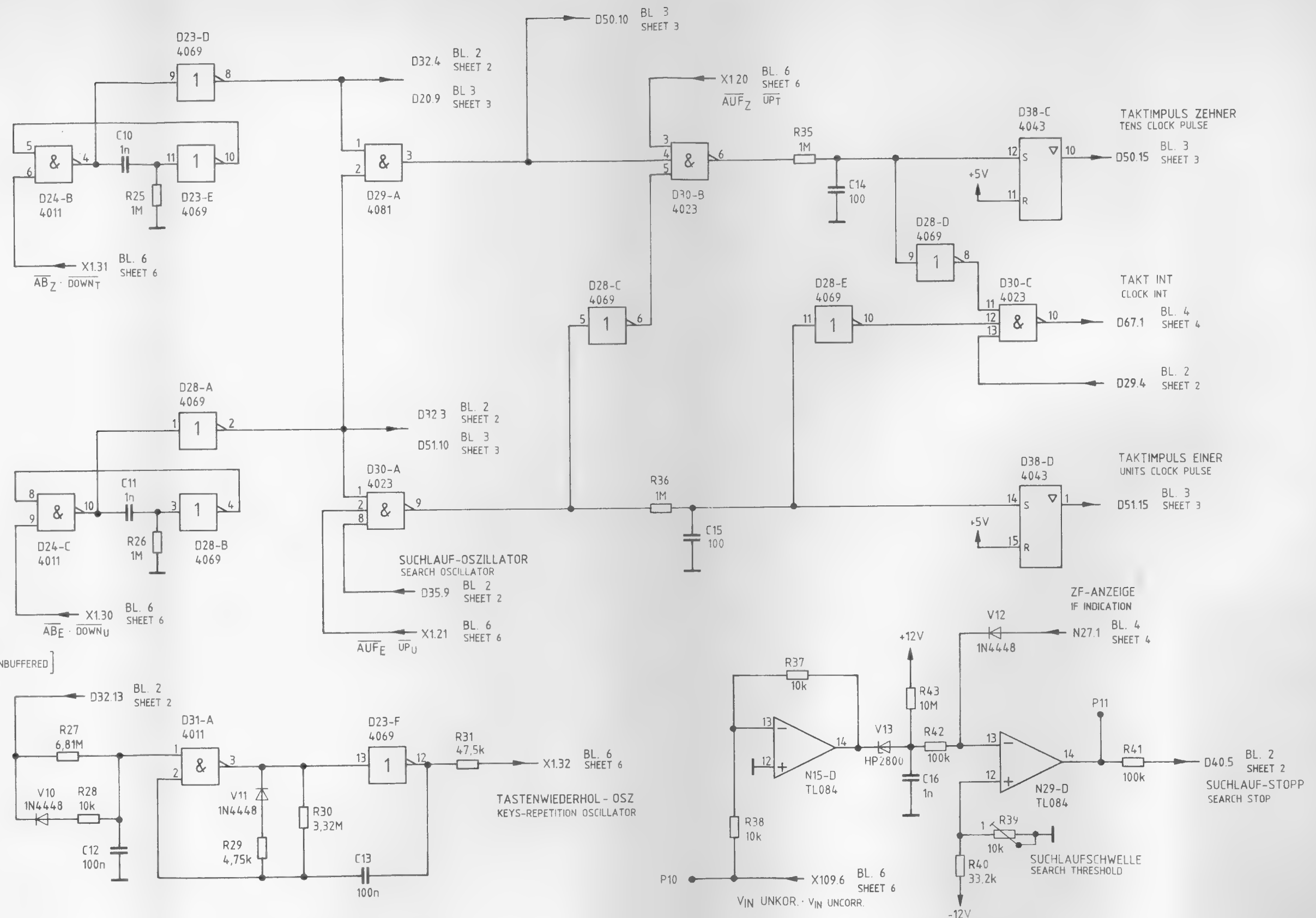
RF-DÄMPF.
RF ATTENUATION
D17.12 / BL. 2 · SHEET 2
N28.10 / BL. 4 · SHEET 4

SAW UNGEP.
SAW UNBUFFERED
N28.12 / BL. 4 · SHEET 4

JF STD. B/G
JF STD. B/G
D86.4 / BL. 2 · SHEET 2

ZF-VERST. UNGEP.
JF GAIN UNBUFFERED
N29.5 / BL. 4 · SHEET 4
D54.13 / BL. 2 · SHEET 2
R63.1 / BL. 2 · SHEET 2


AUTOM. RF-DÄMPF
D319 / BL. 2 · SHEET 2
AUTOM. RF ATTENUATION

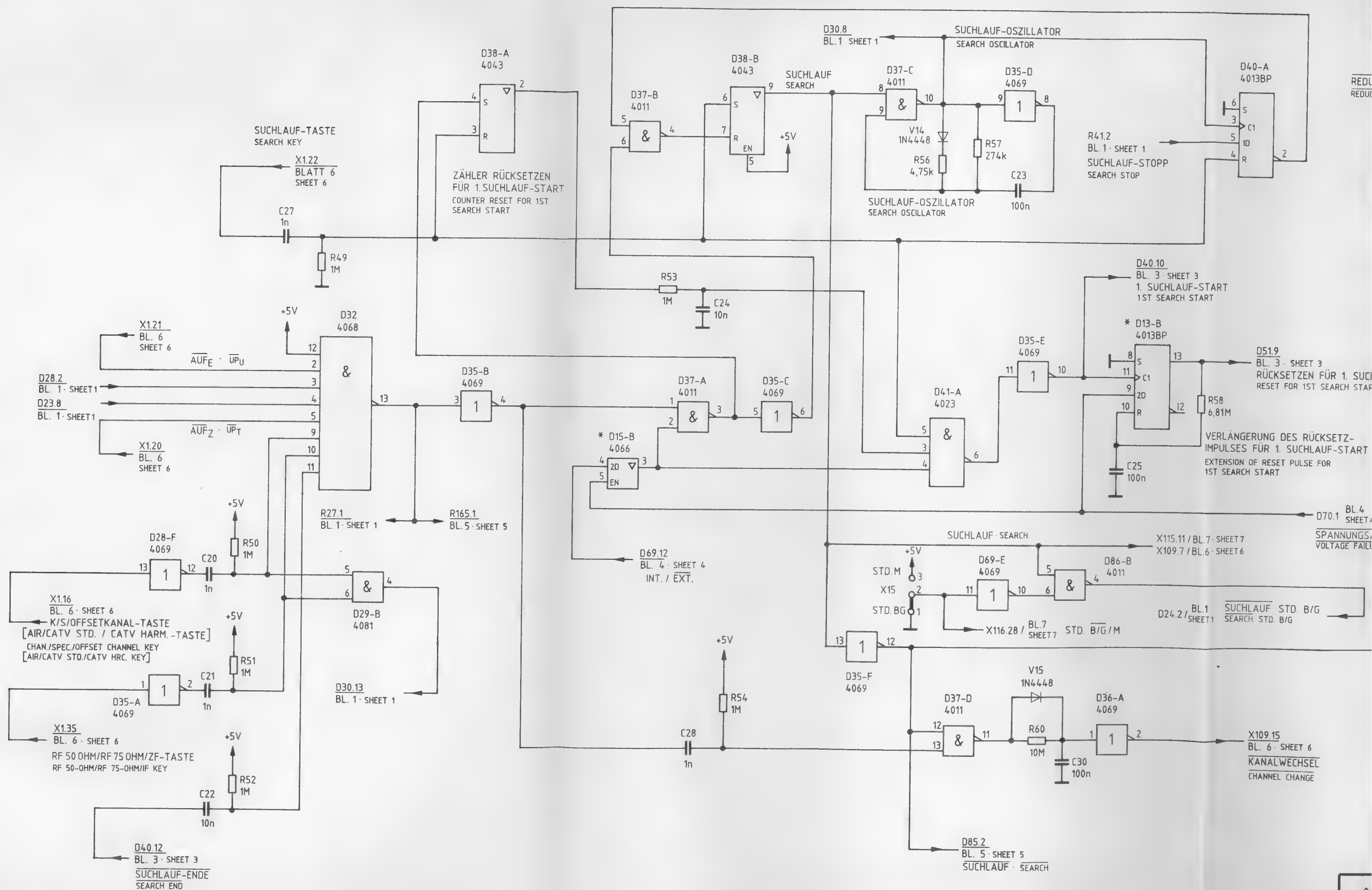


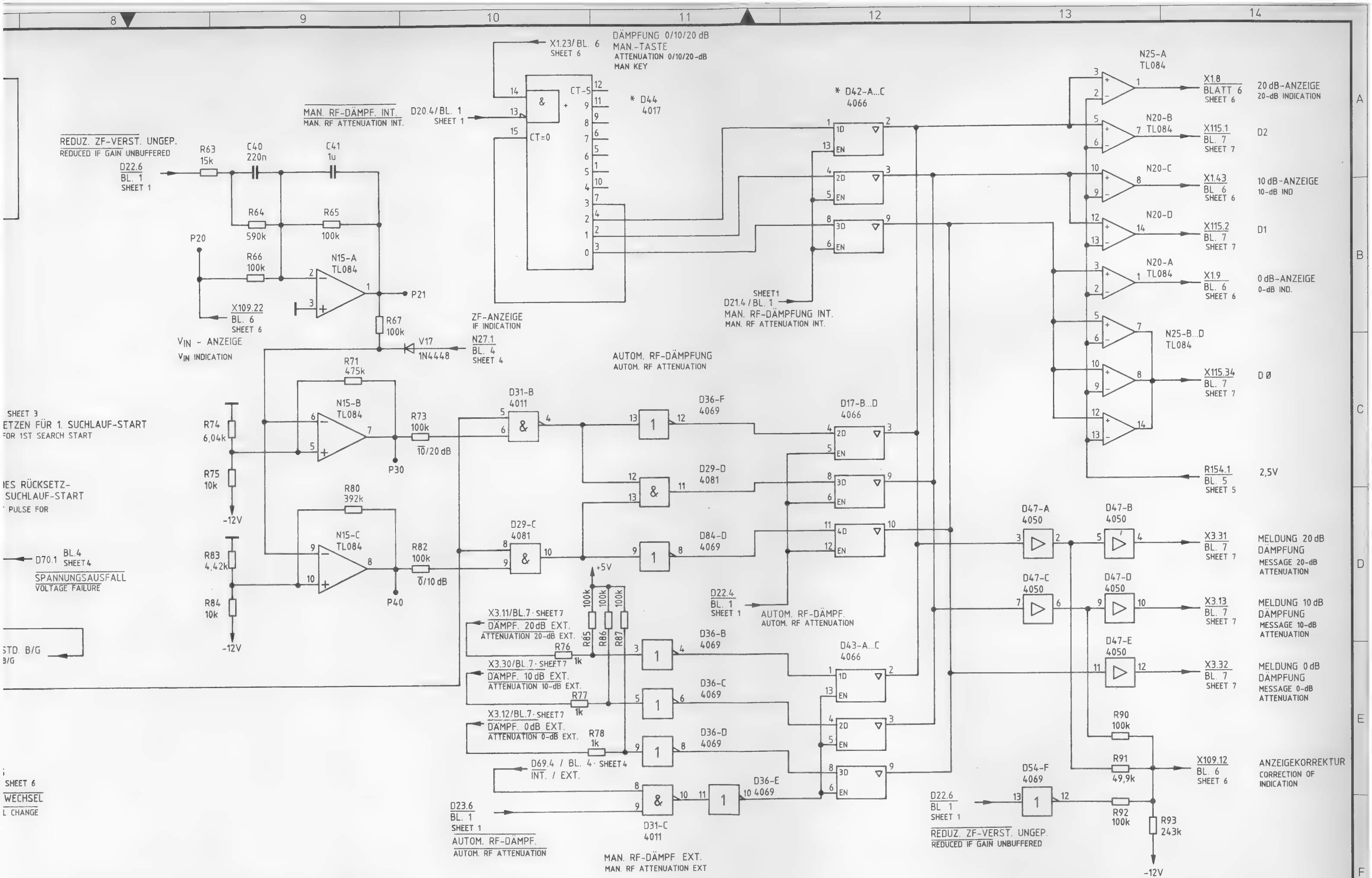
TASTENWIEDERHOL - OSZILLATOR
KEYS-REPETITION OSCILLATOR

SUCHLAUF - STOPP - ERKENNUNG
IDENTIFICATION OF SEARCH STOP

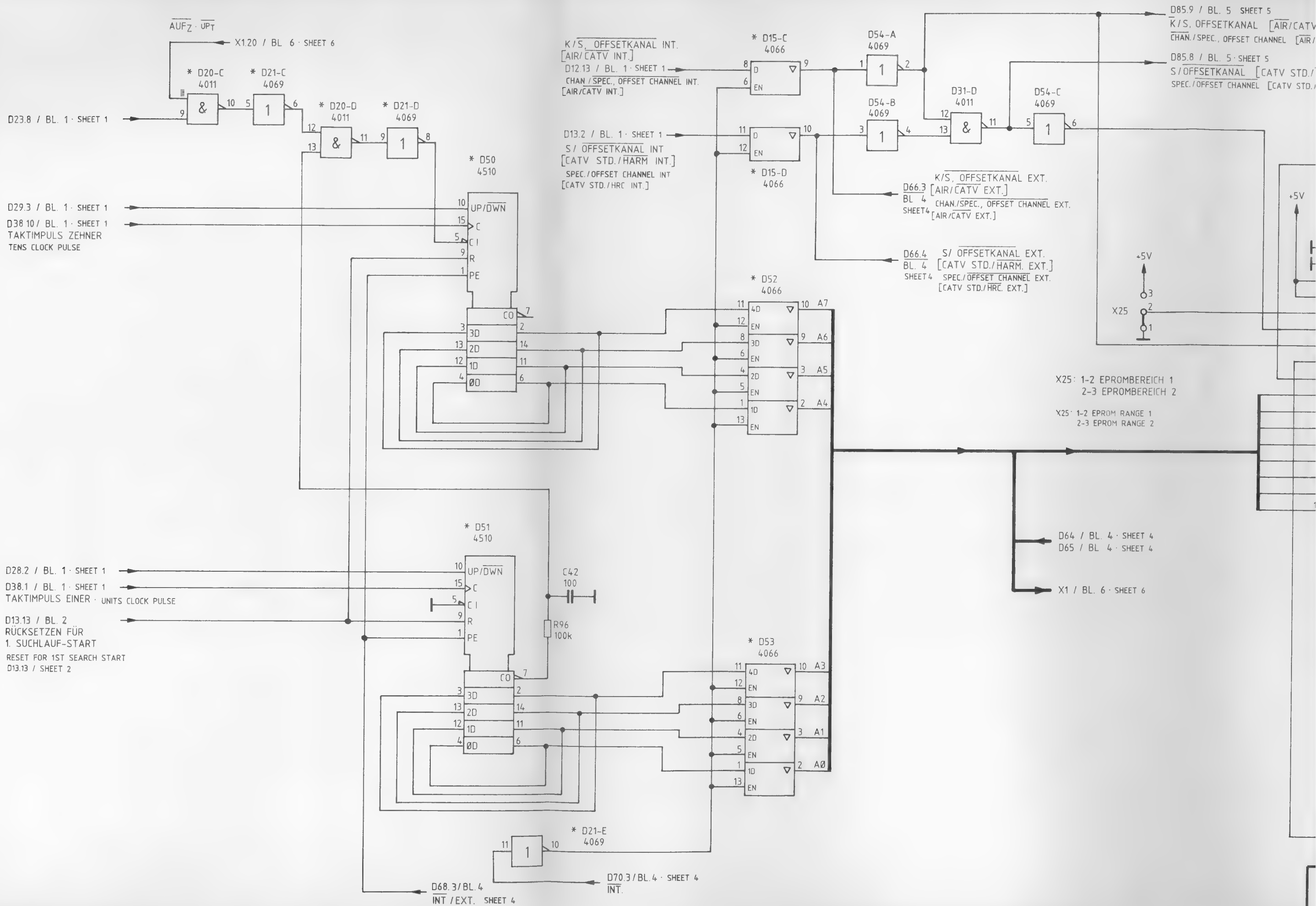
STD. B/G
[STD. M]

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	B	40163	5.88	OS				Bearb	6.87	OS / BA						
								Gepr								
	And Zust	Änderungs- Mittelung	Datum	Name	Änd Zust	Änderungs- Mittelung	Datum	Name	Norm							
											zu Gerät	EMF	reg i V	821.4019 V	erste Z	14

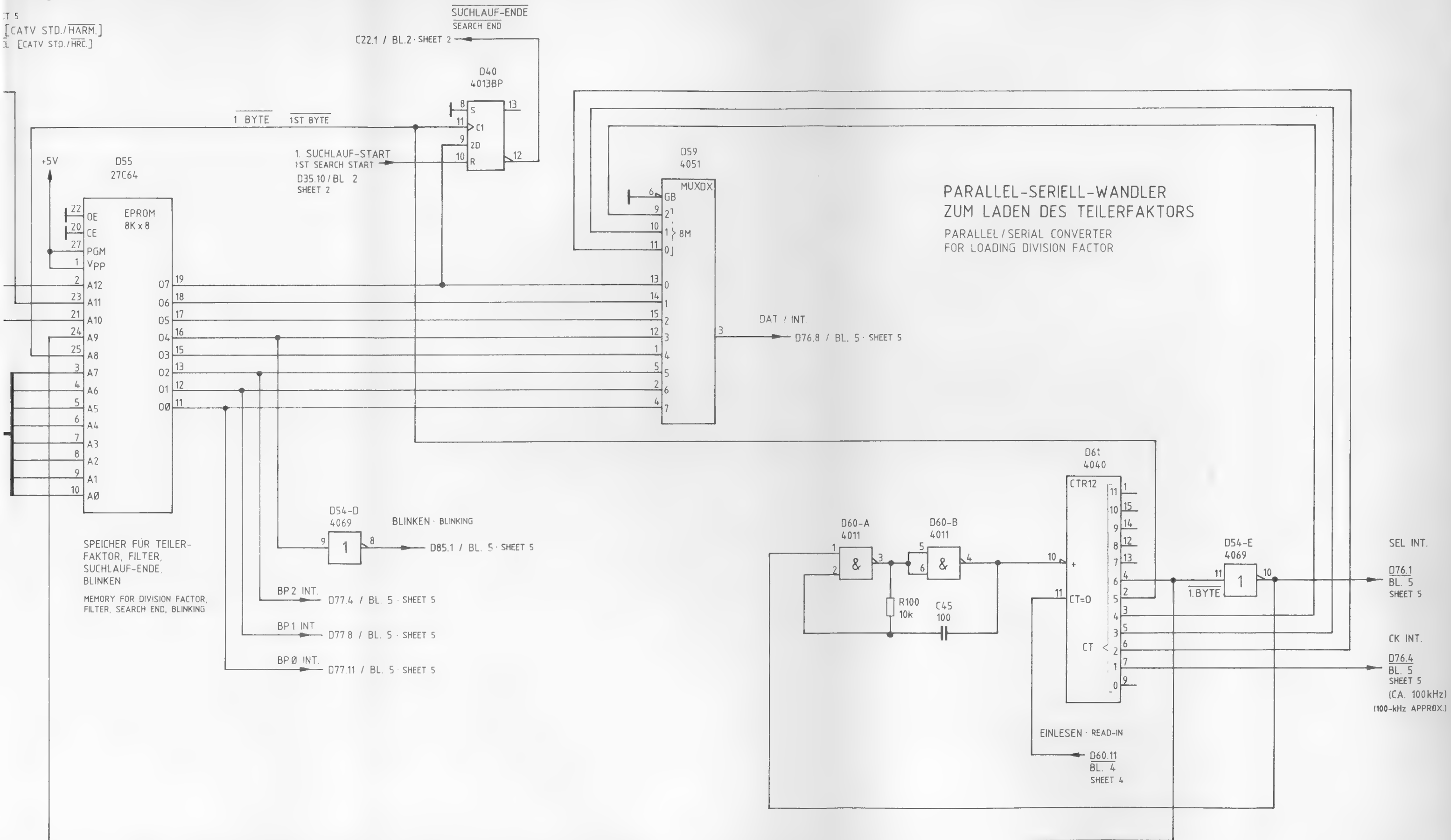




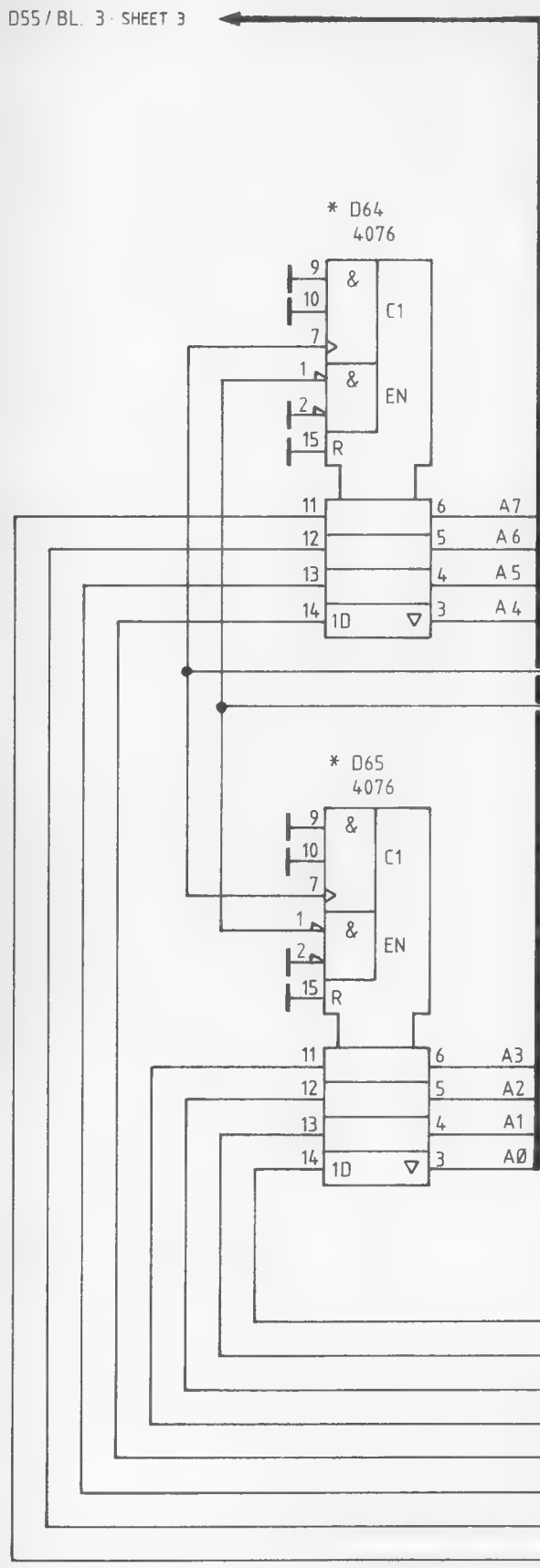
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	B	40163	5.88	OS				Bearb.	6.87	OS / BA	SYNTHESIZER	821.9710 S	2
	C	40163	12.88	OS				Gepr					8 Bl
	And Zust	Anderungs Mitteilung	Datum	Name	And Zust	Anderungs Mitteilung	Datum	Name	Norm				
zu Gerät EMF												reg i. V 821.4019 V	erste Z.



ET 5
[AIR/CATV]
CHANNEL [AIR/CATV]
T 5
[CATV STD./HARM.]
L [CATV STD./HRC.]



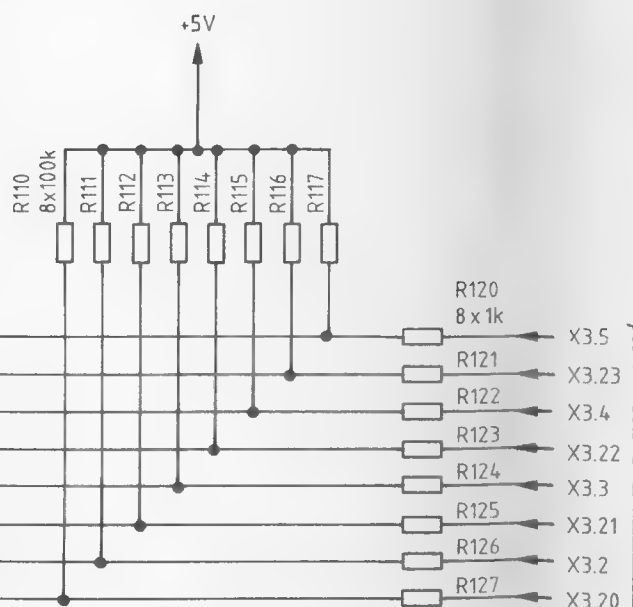
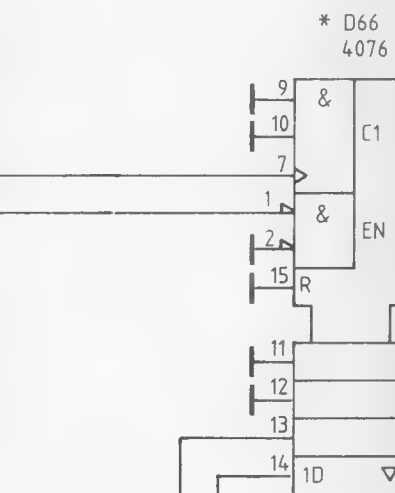
D55 / BL. 3 - SHEET 3



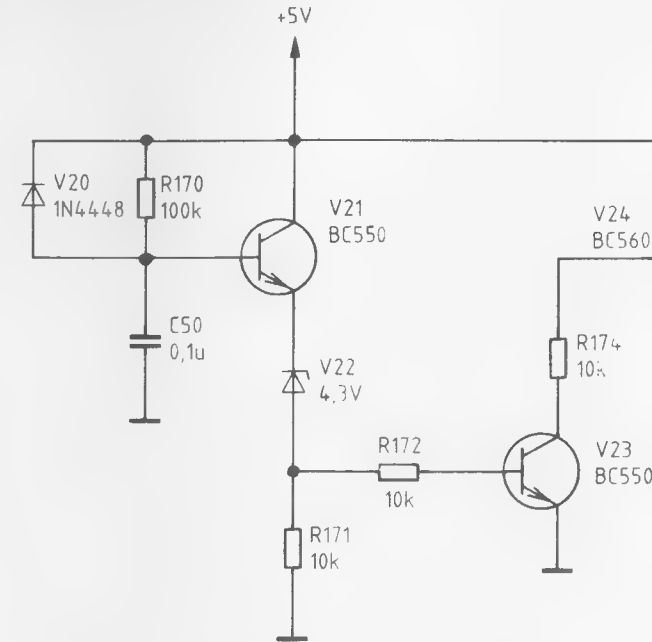
K/S, OFFSETKANAL EXT. [AIR CATV EXT.]
 CHAN / SPEC., OFFSET CHANNEL EXT. [AIR CATV EXT.]
 D15.9 / BL. 3 - SHEET 3

S/ OFFSETKANAL EXT. [CATV STD./HARM. EXT.]
 D15.10 / BL. 3 - SHEET 3

SPEC./ OFFSET CHANNEL EXT. [CATV STD./HRC EXT.]



E0 EXT.
 E1 EXT.
 E2 EXT.
 E3 EXT.
 Z0 EXT.
 Z1 EXT.
 Z2 EXT.
 Z3 EXT.



K/S/ OFFSETKANAL EXT. [AIR/CATV EXT.]
 CHAN / SPEC./ OFFSET CHANNEL EXT. [AIR CATV EXT.]
 X3.24 / BL. 7 - SHEET 7

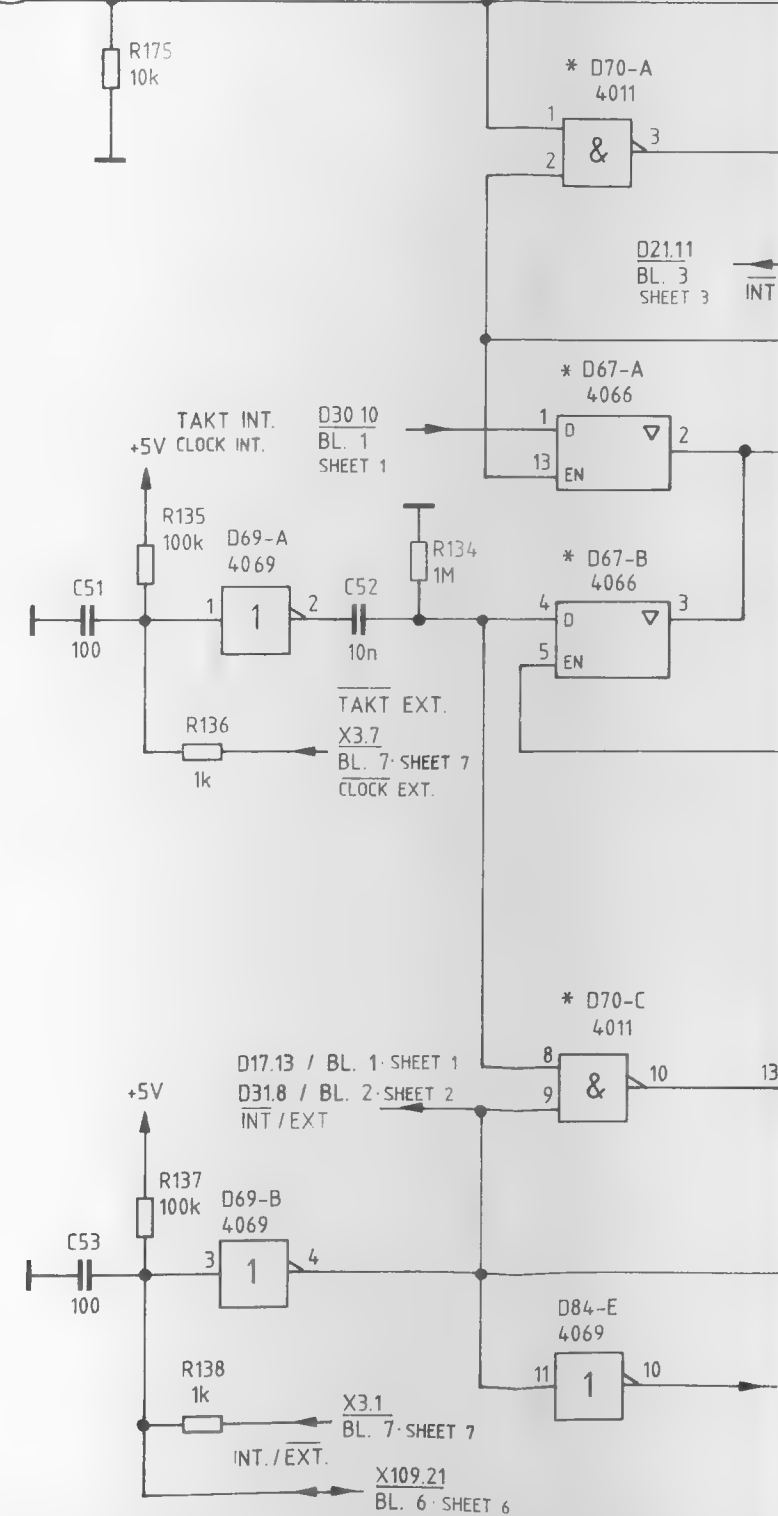
X3.6 / BL. 7 - SHEET 7

S/ OFFSETKANAL EXT. [CATV STD./HARM. EXT.]
 SPEC./ OFFSET CHANNEL EXT. [CATV STD./HRC EXT.]

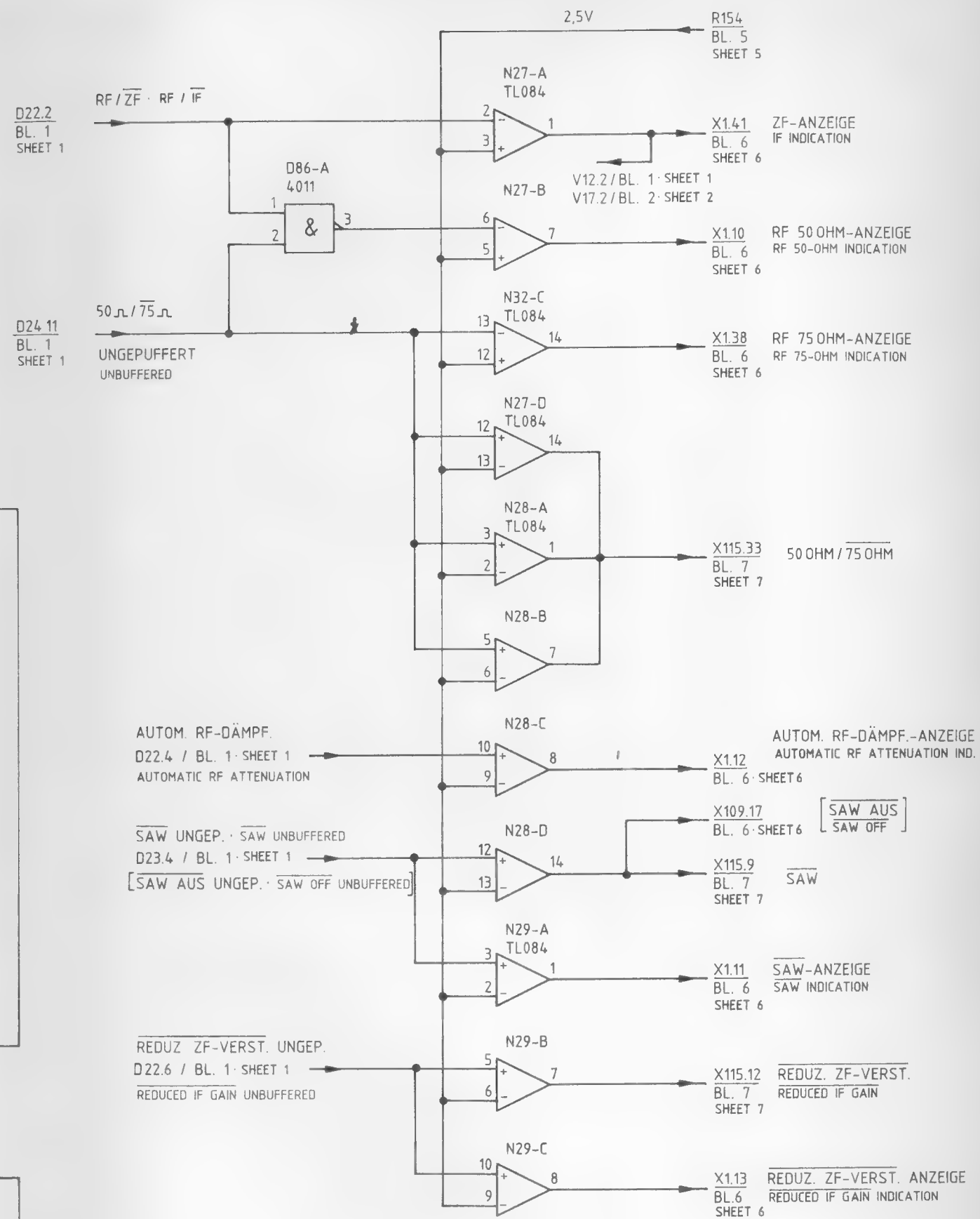
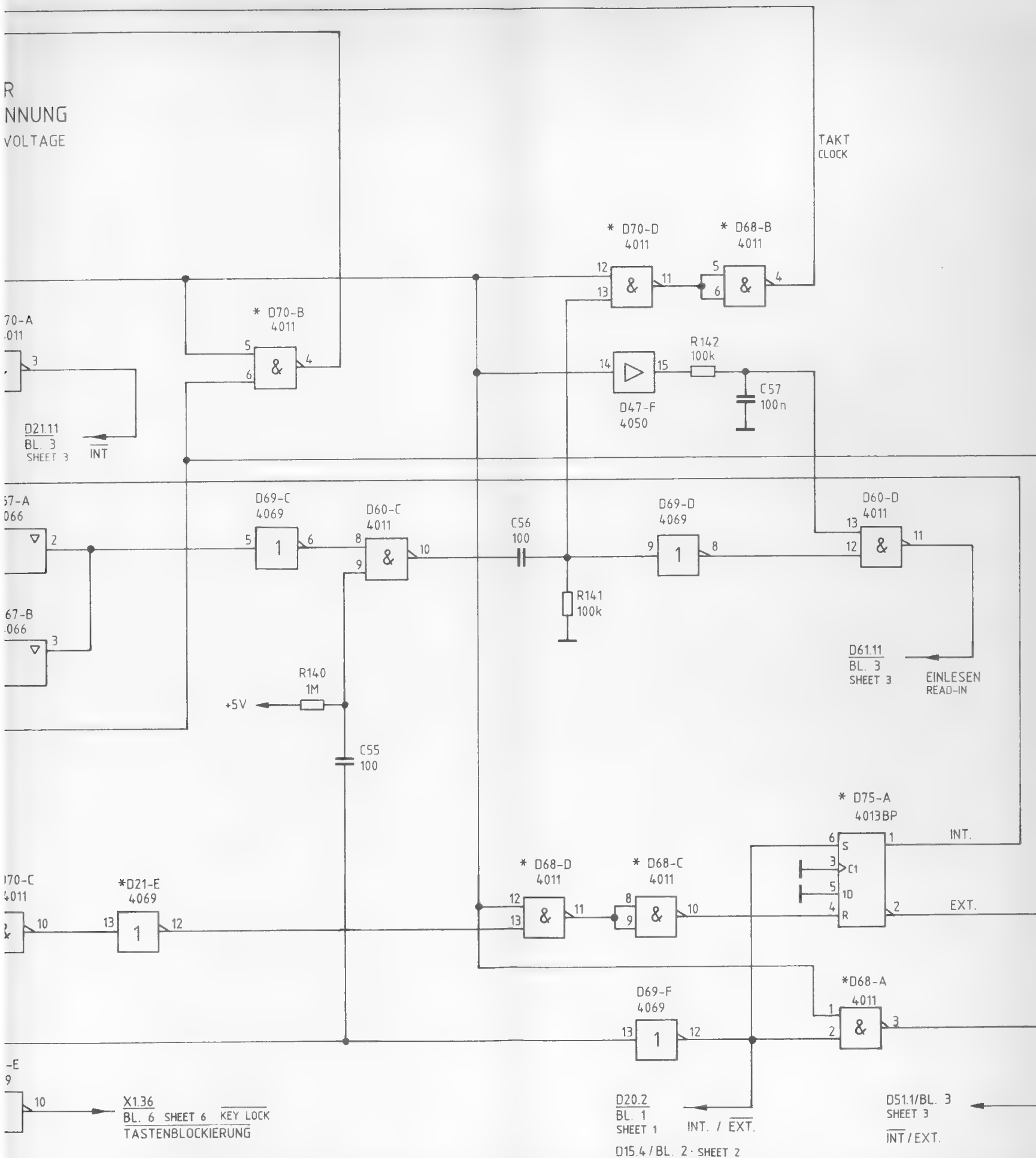
ÜBERWACHUNG DER VERSORUNGSSPANNUNG MONITORING OF SUPPLY VOLTAGE

D13.9 / BL. 2 - SHEET 2
 D20.1 / BL. 1 - SHEET 1

SPANNUNGS-AUSFALL
 VOLTAGE FAILURE



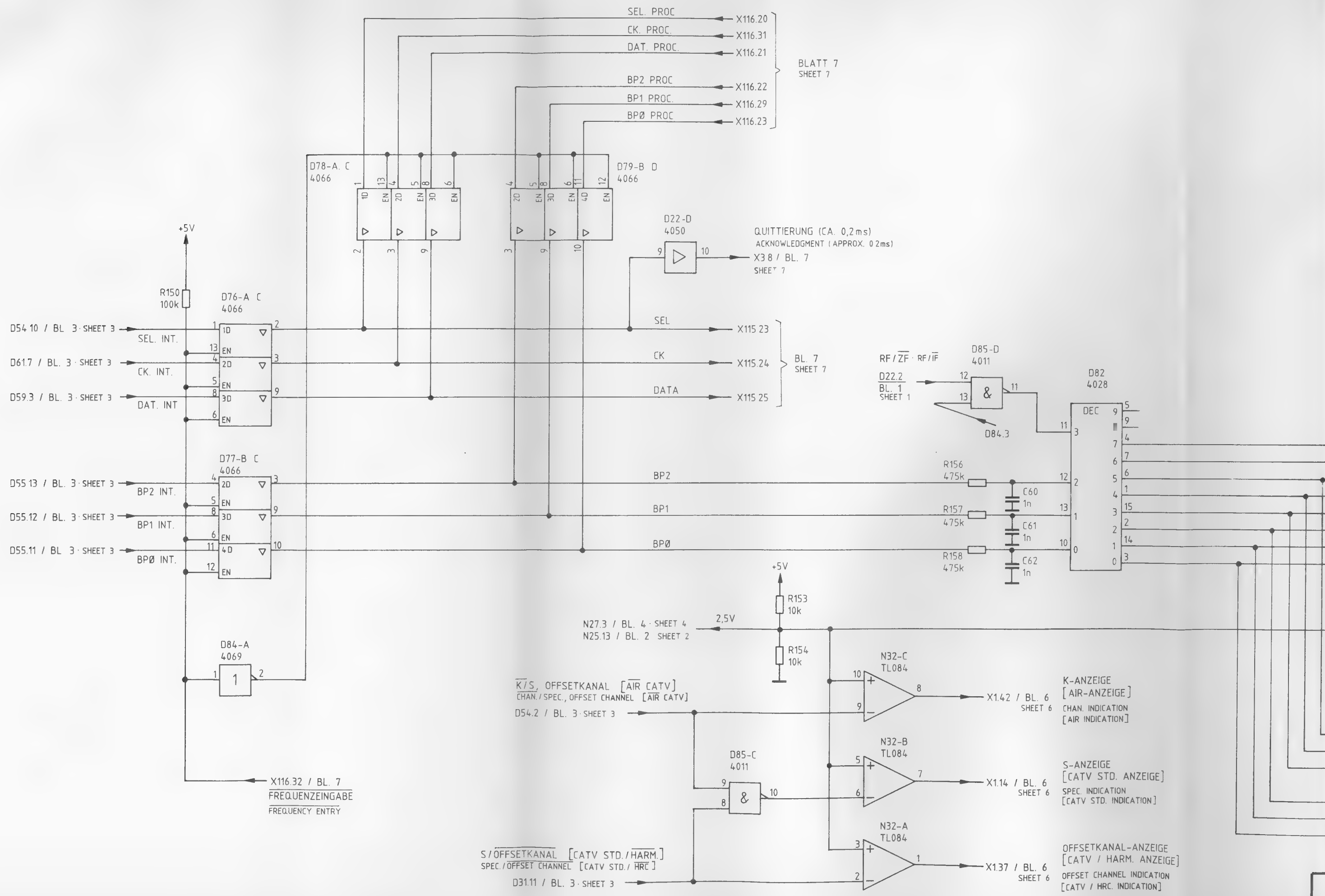
R
NNUNG
VOLTAGE

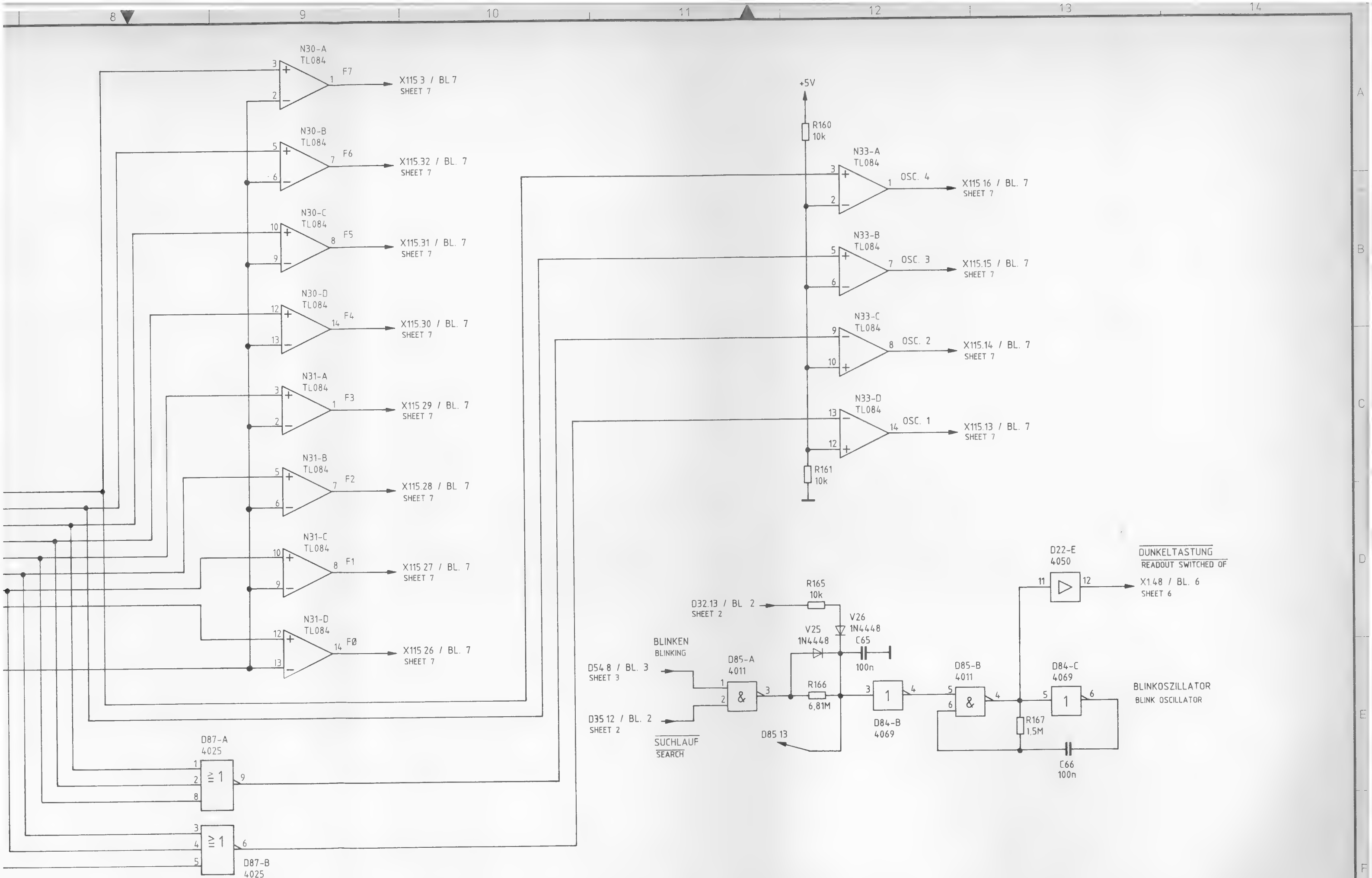


ROHDE & SCHWARZ

A	39285	10.87	OS					2 KGH	Tag	Name
B	40163	3.88	OS					Bearb.	6 87	OS / BA
C	40163	5.88	OS					Gepr.		
And. Zus.	Anderungs-Mitteilung	Datum	Name	And. Zus.	Anderungs-Mitteilung	Datum	Name	Norm		

Benennung	SYNTHESIZER				Zeichn.-Nr.	821.9710 S				Blatt-Nr.	4
zu Gerät	EMF				reg. i. V.	821.4019 V				erste Z.	v. 8

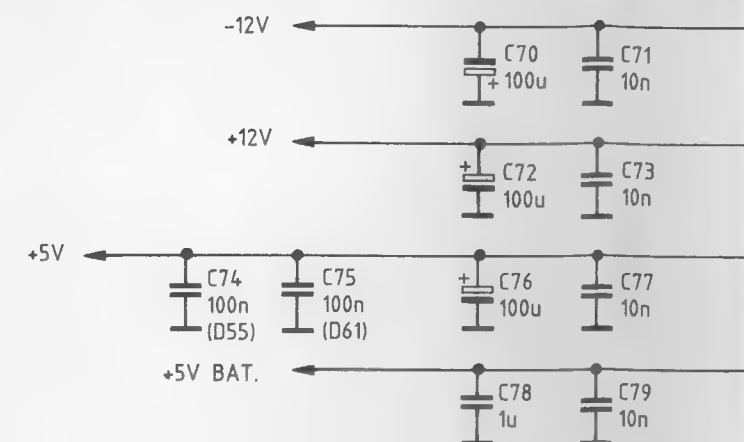




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Zeichn.-Nr.		8. / 10 S		And. Mitlg. Nr.		Datum		Name	
2KGH	gezeichnet	6.87	BA	A	40163	3.88	OS		
	bearbeitet	6.87	OS						
	geprüft								
	normgepr.								



PLATTE)
ARD)
GROUND
GROUND

ASTUNG · READOUT SWITCHED OF

EHNER - ANZEIGE · TENS INDICATION

INER - ANZEIGE · UNITS INDICATION

ANZEIGE · 20-dB INDICATION

ANZEIGE · 10-dB INDICATION

NZEIGE · 0-dB INDICATION

EIGE [AIR - ANZEIGE] · CHANNEL INDICATION [AIR INDICATION]

M - ANZEIGE · RF 50-OHM INDICATION

ZEIGE · IF INDICATION

ANZEIGE [SAW AUS - ANZEIGE] · SAW INDICATION [SAW OFF INDICATION]

NZEIGE · LLO INDICATION

RF - DÄMPFUNG - ANZEIGE · AUTOMATIC RF ATTENUATION INDICATION

- ANZEIGE · REM IEC INDICATION

ZF - VERST. - ANZEIGE · REDUCED IF GAIN INDICATION

M - ANZEIGE · RF 75-OHM INDICATION

EIGE [CATV - STD.] · SPEC. CHAN. INDICATION [CATV - STD.]

ANAL - ANZEIGE [CATV - HARM.] · OFFSET CHANNEL INDICATION [CATV HRC.]

LOCKIERUNG · KEY DISABLE

SETKANAL - TASTE · CHAN./SPEC./OFFSET CHANNEL KEY [AIR/CATV STD./CATV HARM.-TASTE · AIR/CATV STD./CATV HRC. KEY]

M/RF 75 OHM / ZF-TASTE · RF 50-OHM/RF 75-OHM/IF KEY

TASTE [SAW AUS - TASTE] · SAW KEY [SAW OFF KEY]

RF - DÄMPFUNG - TASTE · AUTOMATIC RF ATTENUATION KEY

ZF - VERST. - TASTE · REDUCED IF GAIN KEY

WIEDERHOL - OSZILLATOR · KEYS-REPETITION OSCILLATOR

JP_T

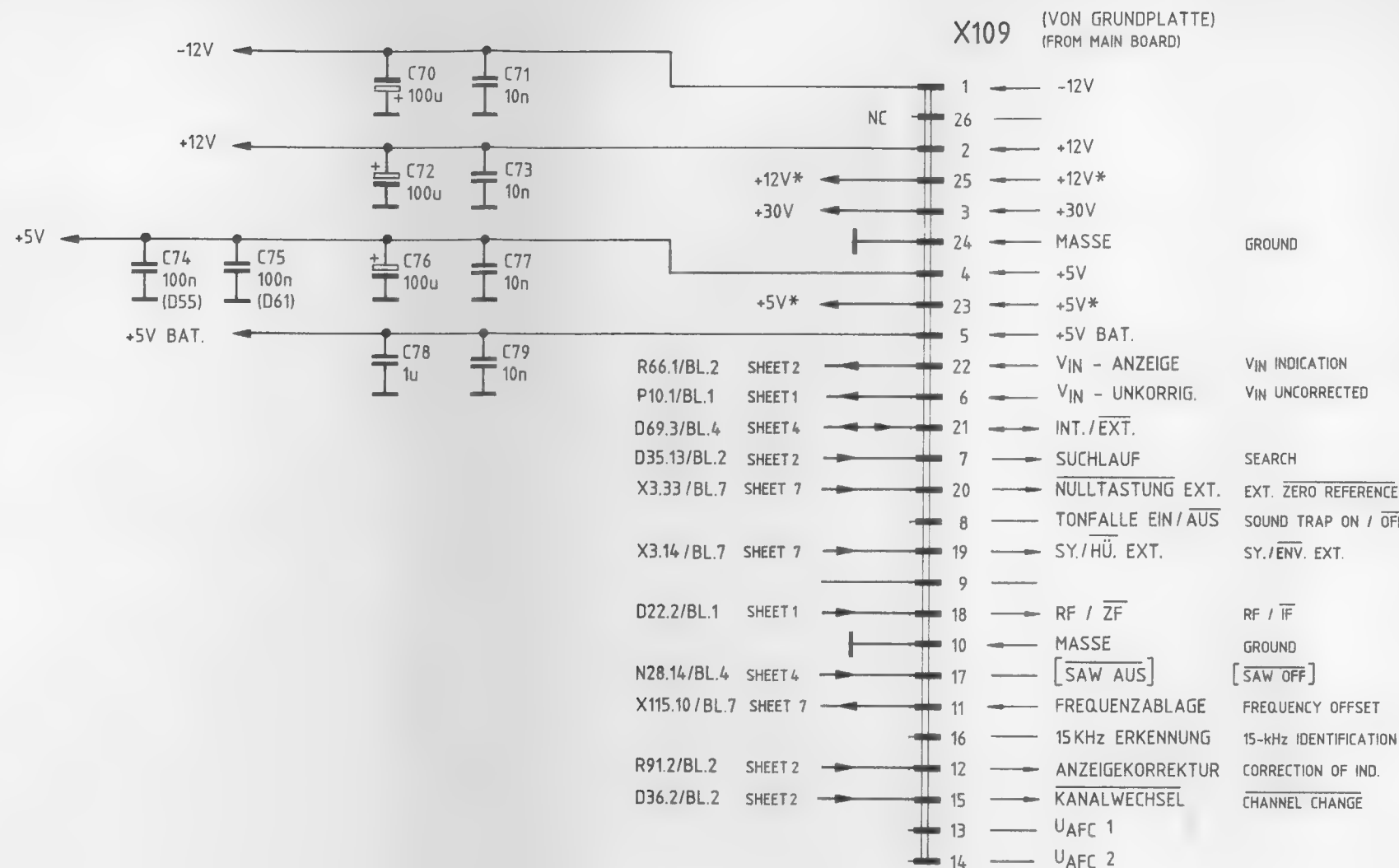
DOWN_T

JP_U

DOWN_U

F - TASTE · SEARCH KEY

IG 0/10/20 dB MAN. - TASTE · ATTENUATION 0/10/20-dB MAN. KEY



X115 (ZUM HF-TEIL) (TO RF SECTION)

N20.7/BL.2	SHEET 2	1	D2
N25.8/BL.2	SHEET 2	34	D0
N20.14/BL.2	SHEET 2	2	D1
N28.1/BL.4	SHEET 4	33	50 / 75 OHM
N30.1/BL.5	SHEET 5	3	F7
N30.7/BL.5	SHEET 5	32	F6
+30V		4	+30V
N30.8/BL.5	SHEET 5	31	F5
+12V		5	+12V
N30.14/BL.5	SHEET 5	30	F4
-12V		6	-12V
N31.1/BL.5	SHEET 5	29	F3
+5V		7	+5V
N31.7/BL.5	SHEET 5	28	F2
		8	MASSE · GROUND
N31.8/BL.5	SHEET 5	27	F1
N28.14/BL.4	SHEET 4	9	SAW
N31.14/BL.5	SHEET 5	26	F0
X109.11/BL.6	SHEET 6	10	FREQUENZABLAGE · FREQUENCY OFFSET
D76.9/BL.5	SHEET 5	25	DATA
D35.13/BL.2	SHEET 2	11	SUCHLAUF · SEARCH
D76.3/BL.5	SHEET 5	24	CK
N29.7/BL.4	SHEET 4	12	REDUZ. ZF - VERST. · REDUCED IF GAIN
D76.2/BL.5	SHEET 5	23	SEL
N33.14/BL.5	SHEET 5	13	OSZ. 1 · OSC. 1
NC		22	
N33.8/BL.5	SHEET 5	14	OSZ. 2 · OSC. 2
NC		21	
N33.7/BL.5	SHEET 5	15	OSZ. 3 · OSC. 3
NC		20	
N33.1/BL.5	SHEET 5	16	OSZ. 4 · OSC. 4
		19	MASSE · GROUND
RESERVIERT · RESERVED		17	FREQUENZ OBERHALB · FREQUENCY EXCEEDED
		18	MASSE · GROUND

X116 (ZUR IEC - PLATTE) (TO IEC BOARD)

X3.1		1	INT. / EXT
X3.20		50	Z3 EXT
X3.2		2	Z2 EXT
X3.21		49	Z1 EXT
X3.3		3	Z0 EXT.
X3.22		48	E3 EXT.
X3.4		4	E2 EXT
X3.23		47	E1 EXT.
X3.5		5	E0 EXT
X3.24		46	K/S, OFFSETKANAL EXT. [AIR/CATV EXT.] • CHAN./S
X3.6		6	S/OFFSETKANAL EXT. [CATV STD. / HARM EXT.]
		45	MASSE • GROUND
X3.7		7	TAKT EXT. • CLOCK EXT.
		44	MASSE • GROUND
X3.8		8	QUITTIERUNG (CA. 0,2ms) • ACKNOWLEDGMENT (APPROX
X3.27		43	RF/ZF EXT. • RF/IF EXT.
X3.9		9	50/75 OHM EXT.
X3.28		42	AUTOM. RF - DÄMPFUNG EXT. • AUTOMATIC RF ATTEN
X3.10		10	SAW EXT. [SAW AUS - EXT.] • SAW EXT. [SAW ON
X3.29		41	REDUZ. ZF - VERST. EXT. • REDUCED IF GAIN EXT
X3.11		11	DÄMPFUNG 20 dB EXT. • ATTENUATION 20-dB EXT
X3.30		40	DÄMPFUNG 10 dB EXT. • ATTENUATION 10-dB EXT.
X3.12		12	DÄMPFUNG 0 dB EXT. • ATTENUATION 0-dB EXT
X3.31		39	MELDUNG 20 dB EXT. • MESSAGE 20-dB EXT
X3.13		13	MELDUNG 10 dB EXT. • MESSAGE 10-dB EXT
X3.32		38	MELDUNG 0 dB EXT. • MESSAGE 0-dB EXT
X3.14		14	SY/HÜ EXT. • SY / ENV. EXT.
X3.33		37	NULLTASTUNG EXT. • ZERO REFERENCE EXT.
		15	NC
		36	NC
+5V BAT.		16	+5V BAT.
		35	NC
-12V		17	-12V
		34	NC
+5V*		18	+5V*
		33	NC
+12V		19	+12V
D84.1/BL.5	SHEET 5	32	FREQUENZEINGABE • FREQUENCY ENTRY
D78.1/BL.5	SHEET 5	20	SEL. PROZ. • SEL. PROC
D78.4/BL.5	SHEET 5	31	CK. PROZ. • CK PROC.
D78.8/BL.5	SHEET 5	21	DAT. PROZ. • DAT. PROC.
		30	NC
D79.4/BL.5	SHEET 5	22	BP 2 PROZ. • BP 2PROC.
D79.8/BL.5	SHEET 5	29	BP 1 PROZ. • BP 1PROC.
D79.11/BL.5	SHEET 5	23	BP 0 PROZ. • BP 0PROC
X15.2/BL.2	SHEET 2	28	STD. B/G / M
X1.29 / BL.6	SHEET 6	24	LOCAL
X139 / BL.6	SHEET 6	27	REM IEC - ANZEIGE • REM IEC INDICATION
X1.40 / BL.6	SHEET 6	25	LLO - ANZEIGE • LLO INDICATION
		26	NC


[illegible]

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ROHDE & SCHWARZ

Zeichn.-Nr.		7710 S		Änd. zust	Änd. Mittlg Nr	Datum	Name
2 KGH		Datum	Name	A	39285	10.87	OS
gezeichnet		6.87	BA	■	40163	3.88	OS
bearbeitet		6.87	OS	C	40163	01.89	OS
geprüft							
normengepr.							

ELEKTR KENNZEICHEN	TYP	+5V	+5V BAT.	+12V	-12V		FREE GATTER (AN MASSE) FREE GATES (TO GROUND)
SYMBOL							
D10	4013		14			7	—
D11	4013		14			7	—
D12	4013		14			7	—
D13	4013		14			7	—
D14	4066		14			7	—
D15	4066		14			7	—
D16	4066	14				7	—
D17	4066	14				7	—
D20	4011		14			7	—
D21	4069		14			7	—
D22	4050	1				8	14
D23	4069	14				7	—
D24	4011	14				7	—
D28	4069	14				7	—
D29	4081	14				7	—
D30	4023	14				7	—
D31	4011	14				7	—
D32	4068	14				7	—
D35	4069	14				7	—
D36	4069	14				7	—
D37	4011	14				7	—
D38	4043	16				8	—
D40	4013	14				7	—
D41	4023	14				7	1,2,8,11,12,13
D42	4066		14			7	10,11,12,
D43	4066		14			7	10,11,12
D44	4017		16			8	—
D47	4050	1				8	—
D50	4510		16			8	—
D51	4510		16			8	—
D52	4066		14			7	—
D53	4066		14			7	—
D54	4069	14				7	—
D55	27C64	28				14	—
D59	4051	16				7, 8	—
D60	4011	14				7	—
D61	4040	16				8	—
D64	4076		16			8	—
D65	4076		16			8	—
D66	4076		16			8	—
D67	4066		14			7	6,8,9,10,11,12
D68	4011		14			7	—
D69	4069	14				7	—
D70	4011		14			7	—
D75	4013		14			7	8,9,10,11
D76	4066	14				7	10,11,12
D77	4066	14				7	1,2,13
D78	4066	14				7	10,11,12
D79	4066	14				7	1,2,13
D82	4028	16				8	—
D84	4069	14				7	13
D85	4011	14				7	—
D86	4011	14				7	8,9,12,13
D87	4025	14				7	11,12,13

ELEKTR KENNZEICHEN	SYMBOLE	TYPE	+5V	+5V BAT.	+12V	-12V	—	FREIE GÄTTER (AN MASSE) FREE GATES (TO GROUND)
N15	TL084				4	11	—	
N20	TL084				4	11	—	
N25	TL084				4	11	—	
N27	TL084				4	11	9,10	
N28	TL084				4	11	—	
N29	TL084				4	11	—	
N30	TL084				4	11	—	
N31	TL084				4	11	—	
N32	TL084				4	11	—	
N33	TL084				4	11	—	

STANDARD M		
FÜR GERÄTEVARIANTE	X15	X25
FOR MODEL		
VAR 50	2-3	2-3
VAR 51	2-3	2-3
VAR 52	2-3	1-2
VAR 53	2-3	1-2
VAR 54		
VAR 55		
VAR 56		
VAR 57		
VAR 58		
VAR 59		
VAR 60		
VAR 61		
VAR 62		
VAR 63		
VAR 64		
VAR 65		
VAR 66		
VAR 67		
VAR 68		
VAR 69		
VAR 70		
VAR 71		
VAR 72		
VAR 73		
VAR 74		
VAR 75		
VAR 76		
VAR 77		
VAR 78		
VAR 79		

[illegible]

	FREIE GATTER (AN MASSE) FREE GATES (TO GROUND)	ELEKTR. KENNZEICHEN SYMBOL	TYP	+5V	+5V BAT	+12V	-12V		FREIE GATTER (AN MASSE) FREE GATES (TO GROUND)
7	—	N15	TL084			4	11.	—	
7	—	N20	TL084			4	11	—	
7	—	N25	TL084			4	11	—	
7	—	N27	TL084			4	11	9,10	
7	—	N28	TL084			4	11	—	
7	—	N29	TL084			4	11	—	
7	—	N30	TL084			4	11	—	
7	—	N31	TL084			4	11	—	
7	—	N32	TL084			4	11	—	
7	—	N33	TL084			4	11	—	
8	14								
7	—								
7	—								
7	—								
7	—								

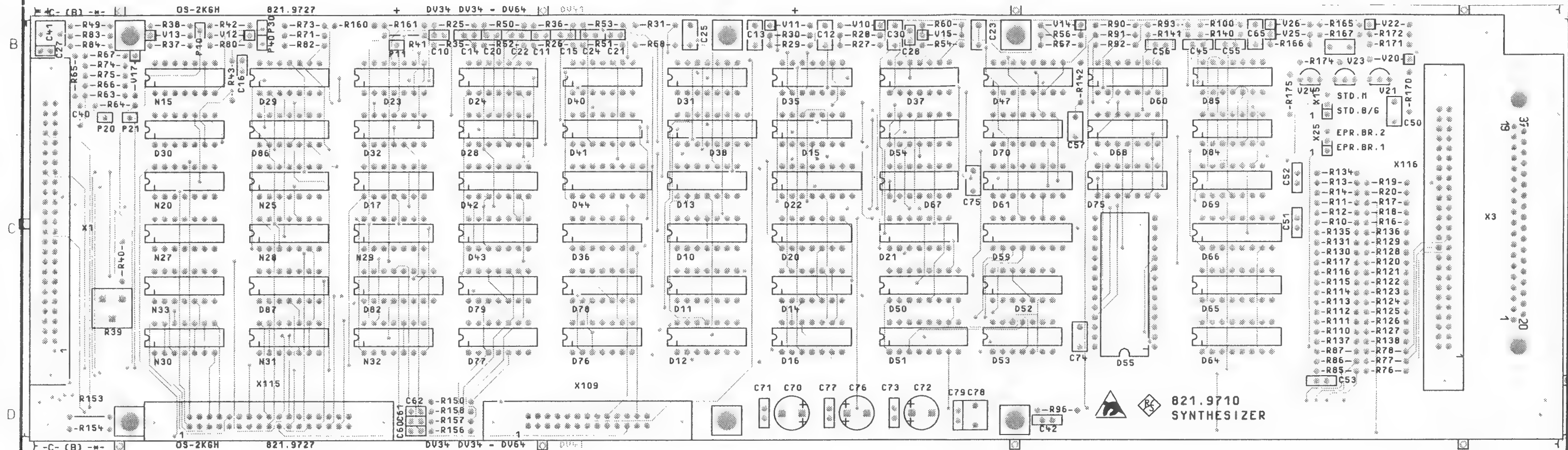
FÜR GERÄTEVARIANTE FOR MODEL	X15	X25
VAR 50	2-3	2-3
VAR 51	2-3	2-3
VAR 52	2-3	1-2
VAR 53	2-3	1-2
VAR 54		
VAR 55		
VAR 56		
VAR 57		
VAR 58		
VAR 59		
VAR 60		
VAR 61		
VAR 62		
VAR 63		
VAR 64		
VAR 65		
VAR 66		
VAR 67		
VAR 68		
VAR 69		
VAR 70		
VAR 71		
VAR 72		
VAR 73		
VAR 74		
VAR 75		
VAR 76		
VAR 77		
VAR 78		
VAR 79		

[illegible]

FÜR GERÄTEVARIANTE	X15	X25
FOR MODEL		
VAR 3		
VAR 4		
VAR 5		
VAR 6		
VAR 7		
VAR 8		
VAR 9		
VAR 10		
VAR 11		
VAR 12		
VAR 13		
VAR 14		
VAR 15		
VAR 16		
VAR 17		
VAR 18		
VAR 19		
VAR 20		
VAR 21		
VAR 22		
VAR 23		
VAR 24		
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VAR 30		
VAR 31		
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VAR 34		
VAR 35		
VAR 36		
VAR 37		
VAR 38		
VAR 39		
VAR 40		
VAR 41		
VAR 42		
VAR 43		
VAR 44		
VAR 45		
VAR 46		
VAR 47		
VAR 48		
VAR 49		

FÜR GERÄTEVARIANTE FOR MODEL	X15	X25
VAR 50	1-2	1-2
VAR 51	1-2	1-2
VAR 52	1-2	1-2
VAR 53	1-2	1-2
VAR 54		
VAR 55		
VAR 56		
VAR 57		
VAR 58		
VAR 59		
VAR 60	1-2	2-3
VAR 61	1-2	2-3
VAR 62	1-2	2-3
VAR 63	1-2	2-3
VAR 64	1-2	2-3
VAR 65	1-2	2-3
VAR 66	1-2	2-3
VAR 67	1-2	2-3
VAR 68		
VAR 69		
VAR 70	1-2	1-2
VAR 71	1-2	1-2
VAR 72	1-2	1-2
VAR 73	1-2	1-2
VAR 74	1-2	1-2
VAR 75	1-2	1-2
VAR 76	1-2	1-2
VAR 77	1-2	1-2
VAR 78	1-2	2-3
VAR 79	1-2	2-3
VAR 80		
VAR 81		
VAR 82		
VAR 83		
VAR 84		
VAR 85		
VAR 86		
VAR 87		
VAR 88		
VAR 89		
VAR 90		
VAR 91		
VAR 92		
VAR 93		
VAR 94		
VAR 95		
VAR 96		
VAR 97		
VAR 98		
VAR 99		

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



VARIANTENERKLÄRUNG / VERSION
VAR 02 - GRUNDAUSFÜHRUNG / BASIC MODEL

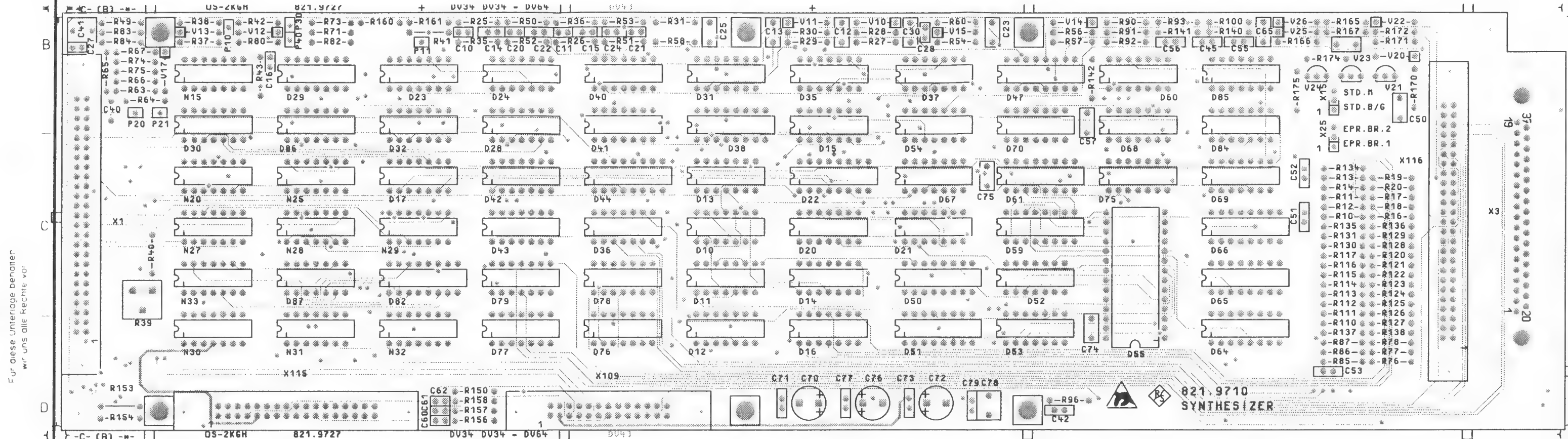
E	40163	4.88	OS	Maße ohne Toleranzangabe		Maßstab 1:1		
						Halbzeug, Werkstoff		
				2KGB	Tag	Name	Benennung	
				Bearb	04.88	SE	SYNTHESIZER SYNTHESIZER	
				Gepr.				
				Norm				
				ROHDE & SCHWARZ		Zeichn.-Nr.	821.9710.01	Blatt-Nr. 2
And. Zust.	Anderungs-Mitteilung	Tag	Name	zu Gerät EMF		reg. i. V.	821.4019V	erste Z




ACHTUNG: EGB!
Elektrostatisch gefährdete Bauelemente erfordern eine besondere Handhabung
ATTENTION ESD!
Electrostatic sensitive devices require a special handling

Für diese Unterlage benutzer.
wir uns die Rechte vor

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



VARIANTENERKLÄRUNG / VERSION
VAR 02 - GRUNDAUSFÜHRUNG / BAS:C MODEL

E	40163	4.88	OS	Maße ohne Toleranzangabe		Maßstab 1:1			
						Halbzeug, Werkstoff			
				2KGB	Tag	Name	Benennung SYNTHESIZER SYNTHESIZER		Z
				Bearb	04.88	SE			
				Gepr					
				Norm					
				 ROHDE & SCHWARZ		Zeichn -Nr		Blatt-Nr	
						821.9710.01		ED	
And Zust	Anderungs- Mitteilung	Tag	Name	zu Gerät EMF		reg i V 821.4019V		erste Z	
								v Bl	

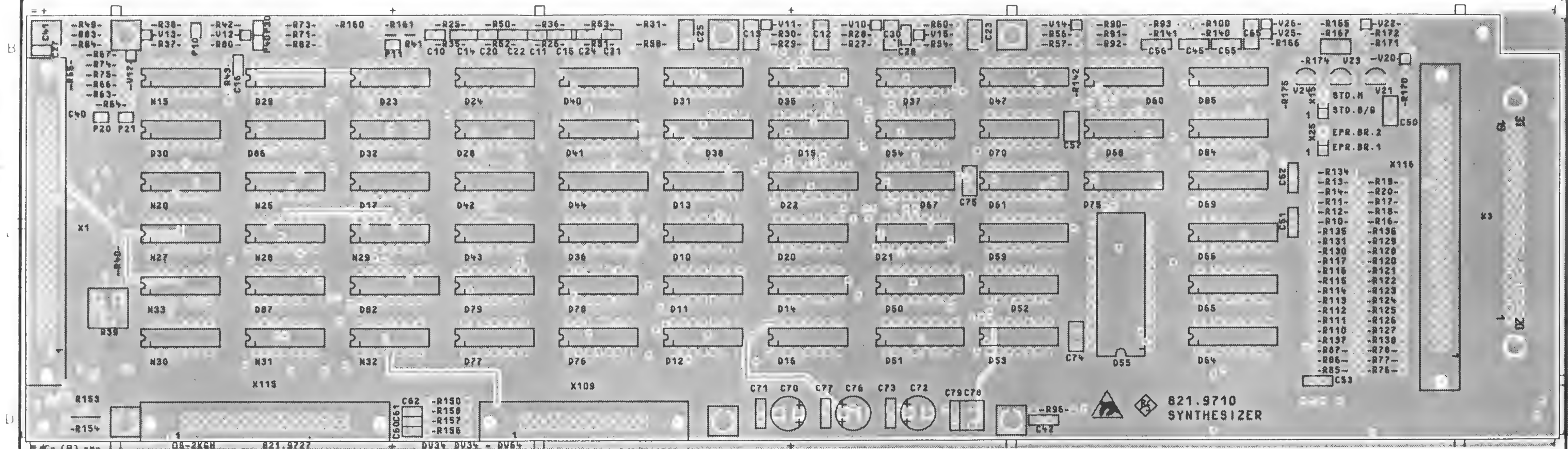


ACHTUNG: EGB!
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ATTENTION ESD!
Electrostatic sensitive devices require a special handling

Für diese Unterlage benötigen wir uns alle Rechte vor



View of tracks on component side



VARIANTENERKLÄRUNG/VERSION
VAR 02 – GRUNDAUSFÜHRUNG/BASIC MODEL

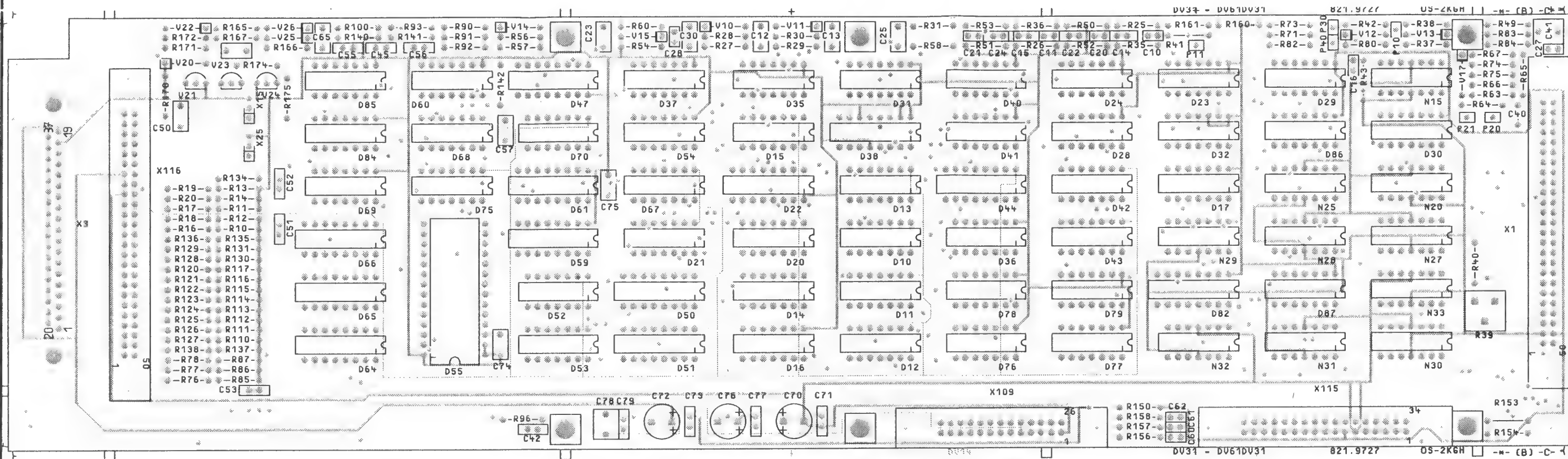


ACHTUNG: EGB!
Elektrostatisch gefährdete
Bauelemente erfordern eine
besondere Handhabung

ATTENTION ESD!
Electrostatic sensitive
devices require a special
handling

[illegible]

View of tracks on solder side




VARIANTENERKLÄRUNG / VERSION
VAR 02 – GRUNDAUSFÜHRUNG / BASIC MODEL

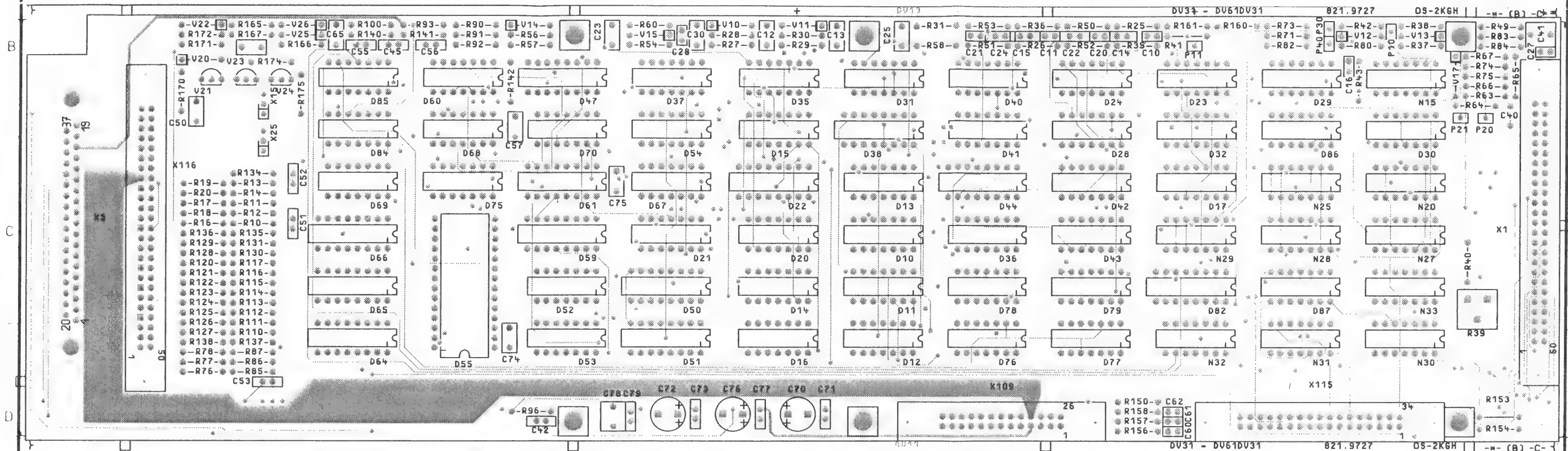


ACHTUNG: EGB!
Elektrostatisch gefährdete
Bauelemente erfordern eine
besondere Handhabung

ATTENTION ESD!
Electrostatic sensitive
devices require a special
handling

E	40163	4.88	OS	Maße ohne Toleranzangabe		Maßstab 1 : 1		
						Halbzeug, Werkstoff		
				2KGB	Tag	Name	Benennung	
				Bearb	04.88	SE	SYNTHESIZER	
				Gepr			SYNTHESIZER	
				Norm				
								Z
				 ROHDE & SCHWARZ		Zeichn -Nr		Blatt-Nr
						821.9710.01		5
And Zust	Anderungs-Mitteilung	Tag	Name	zu Gerät EMF		reg i V 821.4019 V		erste Z
						ED		v Bl

Ansicht und Leitungsführung Lötseite
View of tracks on solder side




VARIANTENERKLÄRUNG / VERSION
VAR02 – GRUNDAUSFÜHRUNG / BASIC MODEL



ACHTUNG: EGB!
Elektrostatisch gefährdete
Bauelemente erfordern eine
besondere Handhabung

ATTENTION ESD!
Electrostatic sensitive
devices require a special
handling

E	40163	4.88	OS	Maße ohne Toleranzangabe		Maßstab 1:1			
						Halbzeug, Werkstoff			
				2KGB	Tag	Name	Benennung		
				Bearb.	04.88	SE	SYNTHESIZER SYNTHESIZER		
				Gepr.					
				Norm					
				 ROHDE & SCHWARZ		Zeichn.-Nr.		Blatt-Nr.	
						821.9710.01		6	
And Zust	Anderungs-Mitteilung	Tag	Name	zu Gerät EMF		reg. i V 821.4019V		erste Z	
								v Bl	

A



C

D

E

F

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Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
C10	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C11	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C12	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0, 1UF/5%		
C13	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0, 1UF/5%		
C14	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C15	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101		
C16	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C20	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C21	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C22	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C23	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0, 1UF/5%		
C24	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C25	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0, 1UF/5%		
C27	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C28	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C30	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0, 1UF/5%		
C40	CK 220NF+-5%63V5RM MKT CAPACITOR	CK 099.2952	WIMA	MKS2/63/0, 22UF/5%		
C41	CK 1UF+-10%50V5RM MKT CAPACITOR	CK 099.2998	WIMA	MKS2/50/1UF/10%		
C42	CC 100PF+-2%63V6,5X9 NPO CAPACITOR	CC 092.7442	STETTNER	EGPZ2,5 100PFNPO		
C45	CC 100PF+-2%63V6,5X9 NPO CAPACITOR	CC 092.7442	STETTNER	EGPZ2,5 100PFNPO		
C50	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0, 1UF/5%		
C51	CC 100PF+-2%63V6,5X9 NPO CAPACITOR	CC 092.7442	STETTNER	EGPZ2,5 100PFNPO		
C52	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C53	CC 100PF+-2%63V6,5X9 NPO CAPACITOR	CC 092.7442	STETTNER	EGPZ2,5 100PFNPO		
C55	CC 100PF+-2%63V6,5X9 NPO CAPACITOR	CC 092.7442	STETTNER	EGPZ2,5 100PFNPO		
C56	CC 100PF+-2%63V6,5X9 NPO CAPACITOR	CC 092.7442	STETTNER	EGPZ2,5 100PFNPO		
C57	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0, 1UF/5%		
C60	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C61	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C62	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C65	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0, 1UF/5%		
C66	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0, 1UF/5%		
C70	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D		
C71	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C72	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D		
C73	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C74	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0, 1UF/5%		
C75	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0, 1UF/5%		
C76	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D		
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für	Sachnummer	Blatt
			Date	Parts list for	Stock Nr.	Page
		13	1288	ED SYNTHESIZER	821.9710.01 SA	1+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C77	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C78	CK 1UF+-10%50V5RM MKT CAPACITOR	CK 099.2898	WIMA	MKS2/50/1UF/10%	
C79	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
D10 ..13	BL HEF4013BP 2XD FLIPFL FLIP FLOP	347.3321	VALVO	HEF4013BP	
D14 ..17	BL CD4066BE 4XANALOGSCH ANALOG SWITCH	290.3906	RCA	CD4066BE	
D20	BL CD4011BE 4X2IN.NANDG NAND GATE	252.7337	RCA	CD4011BE	
D21	BL CD4069UBE 6XINVERTER HEXINVERTER	086.9999	RCA	CD40690BE	
D22	BL HEF4050BP 6X CONVERT CONVERTER	347.3367	VALVO	HEF4050BP	
D23	BL CD4069UBE 6XINVERTER HEXINVERTER	086.9999	RCA	CD40690BE	
D24	BL CD4011BE 4X2IN.NANDG NAND GATE	252.7337	RCA	CD4011BE	
D28	BL CD4069UBE 6XINVERTER HEXINVERTER	086.9999	RCA	CD40690BE	
D29	BL CD4081BE 4X2INP.ANDG AND GATE	299.6872	RCA	CD4081BE	
D30	BL CD4023BE 3X3IN.NANDG NAND GATE	086.7109	RCA	CD4023BE	
D31	BL CD4011BE 4X2IN.NANDG NAND GATE	252.7337	RCA	CD4011BE	
D32	BL CD4068BE 1X8IN.NANDG NAND GATE	569.3161	RCA	CD4068BE	
D35	BL CD4069UBE 6XINVERTER HEXINVERTER	086.9999	RCA	CD40690BE	
D36	BL CD4069UBE 6XINVERTER HEXINVERTER	086.9999	RCA	CD40690BE	
D37	BL CD4011BE 4X2IN.NANDG NAND GATE	252.7337	RCA	CD4011BE	
D38	BL CD4043BE 4XRS- LATCH LATCH	303.1175	RCA	CD4043BE	
D40	BL HEF4013BP 2XD FLIPFL FLIP FLOP	347.3321	VALVO	HEF4013BP	
D41	BL CD4023BE 3X3IN.NANDG NAND GATE	086.7109	RCA	CD4023BE	
D42	BL CD4066BE 4XANALOGSCH ANALOG SWITCH	290.3906	RCA	CD4066BE	
D43	BL CD4066BE 4XANALOGSCH ANALOG SWITCH	290.3906	RCA	CD4066BE	
D44	BL CD4017BE DEC.COUNTER COUNTER	086.7067	RCA	CD4017BE	
D47	BL HEF4050BP 6X CONVERT CONVERTER	347.3367	VALVO	HEF4050BP	
D50	BL MC14510BAL BCD COUNTER COUNTER	418.0229	RCA	CD4510BF	
D51	BL MC14510BAL BCD COUNTER COUNTER	418.0229	RCA	CD4510BF	
D52	BL CD4066BE 4XANALOGSCH ANALOG SWITCH	290.3906	RCA	CD4066BE	
D53	BL CD4066BE 4XANALOGSCH ANALOG SWITCH	290.3906	RCA	CD4066BE	
D54	BL CD4069UBE 6XINVERTER HEXINVERTER	086.9999	RCA	CD40690BE	
D55	BC SOFTW.N.BESTUECKUNGSPL SOFTW. SEE COMPONENTSPLAN	653.2784.90			
D59	BL CD4051BE 8CH. MUX MULTIPLEXER	339.4174	RCA	CD4051BE	
D60	BL CD4011BE 4X2IN.NANDG NAND GATE	252.7337	RCA	CD4011BE	
D61	BL CD4040BE 12B.COUNTER COUNTER	086.7180	RCA	CD4040BE	
D64	BL CD4076BE 4BIT-D-REG. D-REGISTER	337.9479	RCA	CD4076BE	
D65	BL CD4076BE 4BIT-D-REG. D-REGISTER	337.9479	RCA	CD4076BE	
D66	BL CD4076BE 4BIT-D-REG. D-REGISTER	337.9479	RCA	CD4076BE	
D67	BL CD4066BE 4XANALOGSCH ANALOG SWITCH	290.3906	RCA	CD4066BE	
ROHDE & SCHWARZ		Äl Datum Date	Schaltteilliste für Parts list for		Blatt Page
		13 1288	ED SYNTHESIZER		821.9710.01 SA 2+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
D68	BL CD4011BE 4X2IN.NANDG NAND GATE	252.7337	RCA	CD4011BE		
D69	BL CD4069UBE 6XINVERTER HEXINVERTER	086.9999	RCA	CD40690BE		
D70	BL CD4011BE 4X2IN.NANDG NAND GATE	252.7337	RCA	CD4011BE		
D75	BL HEF4013BP 2XD FLIPFL FLIP FLOP	347.3321	VALVO	HEF4013BP		
D76 ..79	BL CD4066BE 4XANALOGSCH ANALOG SWITCH	290.3906	RCA	CD4066BE		
D82	BL SCL4028BE BCD/DEC.DEC BCD/DECADE DECODER	086.7150	SSS	SCL4028BE		
D84	BL CD4069UBE 6XINVERTER HEXINVERTER	086.9999	RCA	CD40690BE		
D85	BL CD4011BE 4X2IN.NANDG NAND GATE	252.7337	RCA	CD4011BE		
D86	BL CD4011BE 4X2IN.NANDG NAND GATE	252.7337	RCA	CD4011BE		
D87	BL CD4025BE 3X3INP.NORG NOR GATE	086.7121	RCA	CD4025BE		
N15	BO TLO74IN 4XFET OPAMP OPERATIONAL AMPLIFIER	568.7528	TEXAS INST	TLO74IN		
N20	BO TLO74IN 4XFET OPAMP OPERATIONAL AMPLIFIER	568.7528	TEXAS INST	TLO74IN		
N25	BO TLO74IN 4XFET OPAMP OPERATIONAL AMPLIFIER	568.7528	TEXAS INST	TLO74IN		
N27 ..33	BO TLO74IN 4XFET OPAMP OPERATIONAL AMPLIFIER	568.7528	TEXAS INST	TLO74IN		
P10	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
P11	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
P20	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
P21	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
P30	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
P40	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
R10 ..14	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R16 ..20	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R25	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D		
R26	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D		
R27	RL 0,35W6,81MOHM+-1%TK50 FILM-RESISTOR	RL 007.3786	RESISTA	MK2 6,81MOHM 1% TK50		
R28	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R29	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D		
R30	RL 0,35W3,32MOHM+-1%TK50 METALFILMRESISTOR	RL 099.8215	RESISTA	MK2 3,32MOHM 1% TK50		
R31	RL 0,35W 47,5KOHM+-1%TK50 RESISTOR	RL 083.1800	DRALORIC	SMA/207/47,5K-F-C		
R35	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D		
R36	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D		
R37	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R38	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R39	RS 0,5W10KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7903	BOURNS	3386F-1-103		
R40	RL 0,35W 33,2KOHM+-1%TK50 RESISTOR	RL 083.1674	DRALORIC	SMA0207/33,2K-F-C		
R41	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R42	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
ROHDE & SCHWARZ		Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		13	1288	ED SYNTHESIZER	821.9710.01 SA	3+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R43	RL 0,35W 10MOHM+-1%TK50 RESISTOR	RL 620.0318	RESISTA	MK2 10MOHM 1% TK50	
R49	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D	
..54 R56	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R57	RL 0,35W 274 KOHM+-1%TK50 RESISTOR	RL 083.2364	DRALORIC	SMA/207/274K-F-C	
R58	RL 0,35W6,81MOHM+-1%TK50 FILM-RESISTOR	RL 007.3786	RESISTA	MK2 6,81MOHM 1% TK50	
R60	RL 0,35W 10MOHM+-1%TK50 RESISTOR	RL 620.0318	RESISTA	MK2 10MOHM 1% TK50	
R63	RL 0,35W 15,0KOHM+-1%TK50 RESISTOR	RL 083.1400	DRALORIC	SMA0207/15K-F-D	
R64	RL 0,35W 590 KOHM+-1%TK50 RESISTOR	RL 083.2670	DRALORIC	SMA/207/590K-F-C	
R65	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R66	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R67	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R71	RL 0,35W 475 KOHM+-1%TK50 RESISTOR	RL 083.2593	DRALORIC	SMA0207/475K-F-C	
R73	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R74	RL 0,35W 6,04KOHM+-1%TK50 RESISTOR	RL 082.6089	DRALORIC	SMA 0207/6,04OHM-F-C	
R75	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R76	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R77	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R78	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R80	RL 0,35W 392 KOHM+-1%TK50 RESISTOR	RL 083.2512	DRALORIC	SMA0207/392K-F-C	
R82	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R83	RL 0,35W 4,42KOHM+-1%TK50 RESISTOR	RL 083.1074	DRALORIC	SMA0207/4,42K-F-D	
R84	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R85	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R86	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R87	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R90	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R91	RL 0,35W 49,9KOHM+-1%TK50 RESISTOR	RL 082.6114	DRALORIC	SMA 0207/49,9K-F-C	
R92	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R93	RL 0,35W 243 KOHM+-1%TK50 RESISTOR	RL 083.2312	DRALORIC	SMA0207/243K-F-C	
R96	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R100	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R110	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
...117 R120	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
..129 R130	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R131	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R134	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D	
R135	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R136	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R137	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	13	1288			
			ED SYNTHESIZER	821.9710.01 SA	4+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
R138	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R140	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D		
R141	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R142	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R150	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R153	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R154	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R156	RL 0,35W 475 KOHM+-1%TK50 RESISTOR	RL 083.2593	DRALORIC	SMA0207/475K-F-C		
R157	RL 0,35W 475 KOHM+-1%TK50 RESISTOR	RL 083.2593	DRALORIC	SMA0207/475K-F-C		
R158	RL 0,35W 475 KOHM+-1%TK50 RESISTOR	RL 083.2593	DRALORIC	SMA0207/475K-F-C		
R160	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R161	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R165	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R166	RL 0,35W6,81MOHM+-1%TK50 FILM-RESISTOR	RL 007.3786	RESISTA	MK2 6,81MOHM 1% TK50		
R167	RL 0,35W1,50MOHM+-1%TK50 METALFILMRESISTOR	RL 099.8138	RESISTA	MK2 1,50MOHM 1% TK50		
R170	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R171	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R172	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R174	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R175	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
V10	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V11	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V12	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V13	AE 5082-2800 SCHOTTKY DIODE	AE 012.9066	HEWLETT-P.	5082-2800		
V14	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V15	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V17	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V20	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V21	AK BC550B N 50V 100MA TRANSISTOR	AK 007.2050	SIEMENS	BC550B GURT,POL.CBE		
V22	AE BZX79/C4V3 0,5W ZDI ZENER DIODE	AE 012.2426	VALVO	BZX55/(79)C4V3		
V23	AK BC550B N 50V 100MA TRANSISTOR	AK 007.2050	SIEMENS	BC550B GURT,POL.CBE		
V24	AK BC560B P 45V 100MA TRANSISTOR	AK 007.2044	SIEMENS	BC560B GURT,POL.CBE		
V25	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V26	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
X1	FP STECKERLEISTE 50P.GER. CONNECTOR 50P.	FP 099.9434	PANDUIT	050-050-133BC		
X3	FM IND.STECKERLEISTE 37P 37-PIN INSERT	FM 273.4020	FCT	F37P5-K45		
X15	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
X25	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		13	1288	ED SYNTHESIZER	821.9710.01 SA	5+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
X109	FP STECKERLEISTE 26P.GER. CONNECTOR 26POL.	FP 620.0147	PANDUIT	050-026-133BC	- ENDE -
X115	FP STIFTLISTE 34P.GERADE CONNECTOR 34P	FP 645.7145	PANDUIT	050-034-133BC	
X116	FP STECKERLEISTE 50P.GER. CONNECTOR 50P.	FP 099.9434	PANDUIT	050-050-133BC	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	13	1288	ED SYNTHESIZER	821.9710.01 SA	6-

(ZEHNER)
(TENS)

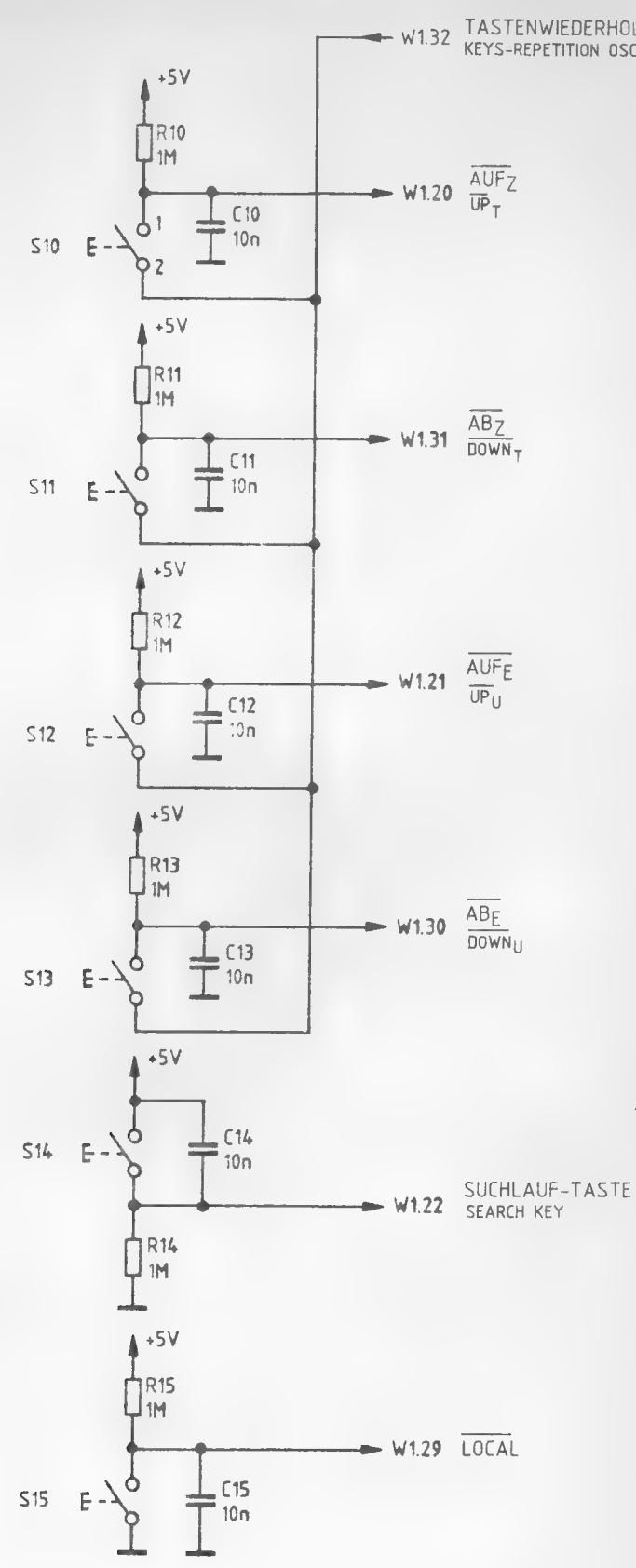
(ZEHNER)
(TENS)

(EINER)
(UNITS)

(EINER)
(UNITS)

SUCHLAUF
SEARCH

LOCAL



NORMAL / SONDERKANAL /
OFFSETKANAL
NORMAL / SPEC. / OFFSET CHANNEL
[AIR / CATV STD. / CATV. HRC.]

EINGANG
RF 50 OHM / RF 75 OHM / ZF
INPUT
RF 50 OHM / RF 75 OHM / IF

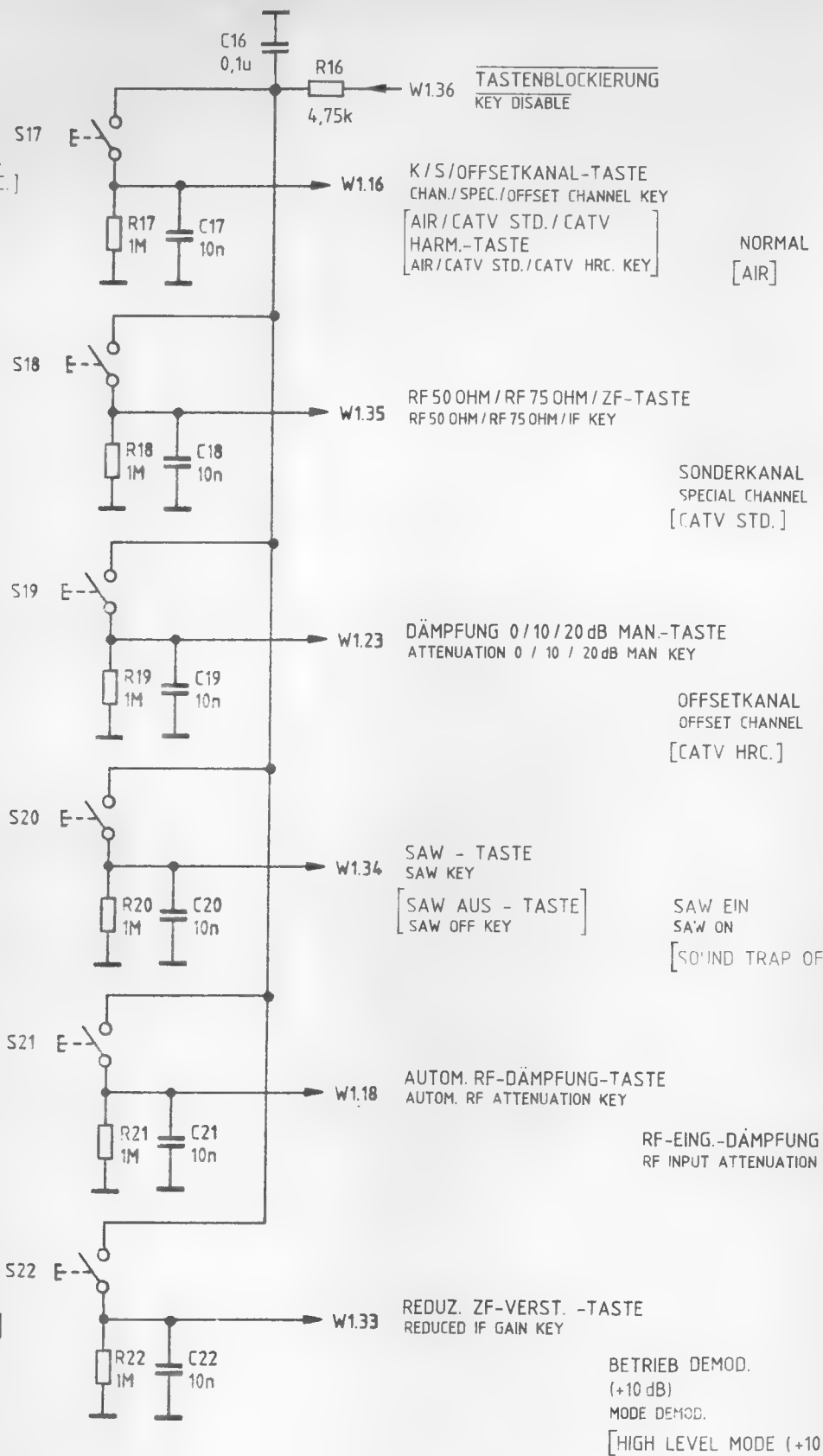
RF-EING.-DÄMPFUNG MAN.
0 / 10 / 20 dB
RF INPUT ATTENUATION MAN.
0 / 10 / 20 dB

SAW EIN
SAW ON
[SOUND TRAP OFF]

RF-EING.-DÄMPFUNG
AUTO / MAN
RF INPUT ATTENUATION
AUTO. / MAN

BETRIEB DEMOD
(+10 dB)
MODE DEMOD
[HIGH LEVEL MODE (+10 dB)]

RF 50 OHM



NORMAL
[AIR]

SONDERKANAL
SPECIAL CHANNEL
[CATV STD.]

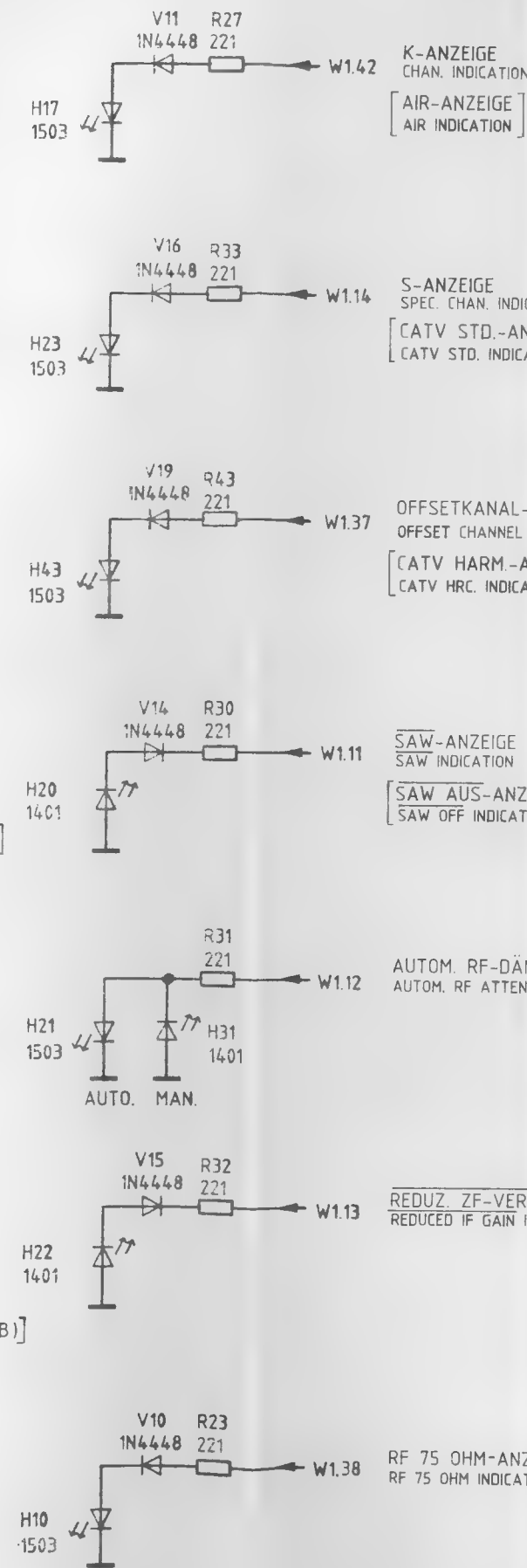
OFFSETKANAL
OFFSET CHANNEL
[CATV HRC.]

SAW EIN
SAW ON
[SOUND TRAP OFF]

RF-EING.-DÄMPFUNG
RF INPUT ATTENUATION

BETRIEB DEMOD.
(+10 dB)
MODE DEMOD.
[HIGH LEVEL MODE (+10 dB)]

RF 75 OHM



K-ANZEIGE
CHAN. INDICATION

AIR-ANZEIGE
AIR INDICATION

S-ANZEIGE
SPEC. CHAN. INDICATION
CATV STD.-ANZEIGE
CATV STD. INDICATION

OFFSETKANAL-ANZEIGE
OFFSET CHANNEL INDICATION

CATV HARM.-ANZEIGE
CATV HRC. INDICATION

SAW-ANZEIGE
SAW INDICATION

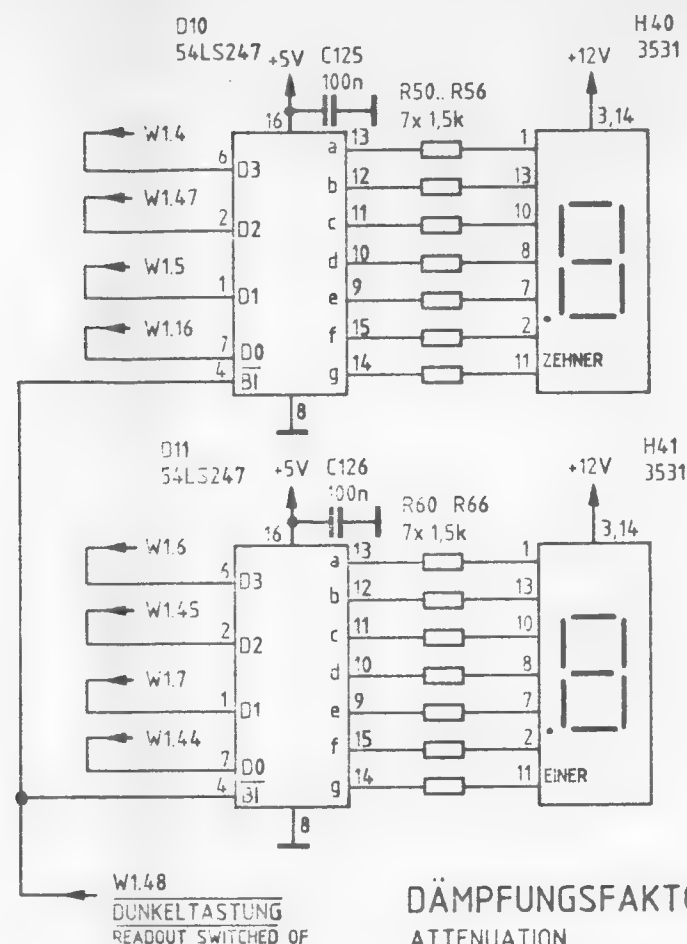
SAW AUS-ANZEIGE
SAW OFF INDICATION

AUTOM. RF-DÄMPFUNG-ANZEIGE
AUTOM. RF ATTENUATION INDICATION

REDUZ. ZF-VERST.-ANZEIGE
REDUCED IF GAIN INDICATION

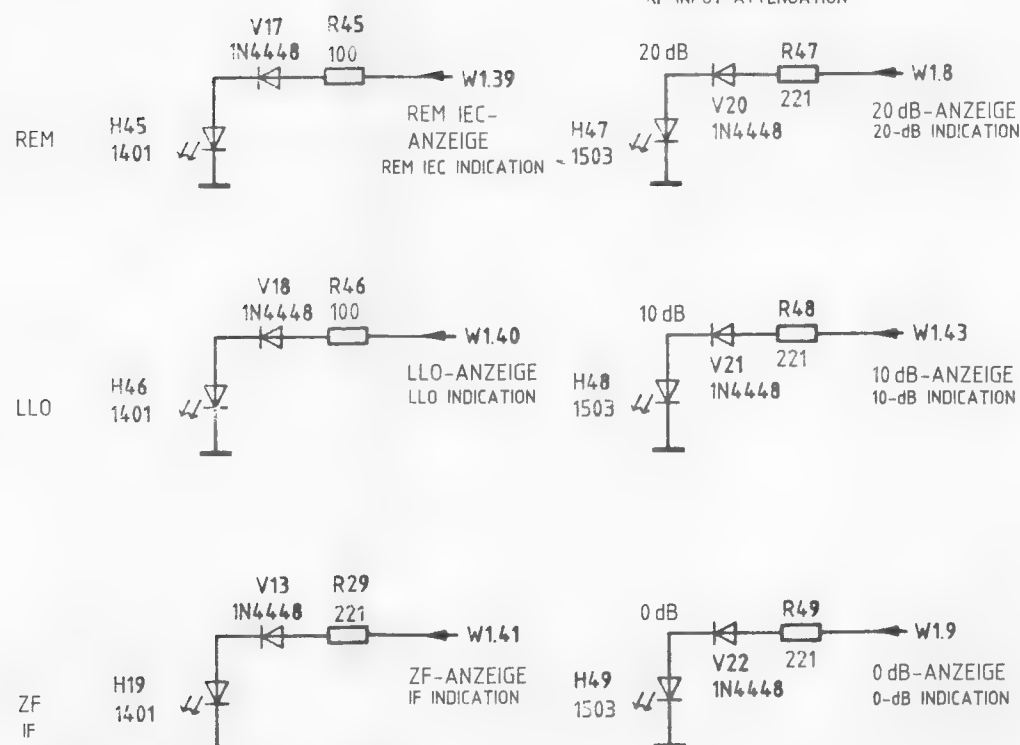
RF 75 OHM-ANZEIGE
RF 75 OHM INDICATION

KANALNUMMER - ANZEIGE CHANNEL READOUT



DÄMPFUNGSAKTOR ATTENUATION

RF-EING - DÄMPFUNG
RF INPUT ATTENUATION



STANDARD: "B/G"
[STANDARD: "M"]

ROHDE & SCHWARZ

A	39285	1387	OS				2KGH	Tag	Name
B	40163	388	OS				Bearb	7.86	OS / BA
							Gepr		
Änd	Änderungs-	Datum	Name	Änd	Änderungs-	Datum	Name	Norm	

Benennung

ANZEIGEPLATTE
CIRCUIT DIAGRAM OF DISPLAY BOARD

Zeichn. Nr.

821.9862 S

Blatt-Nr.

1

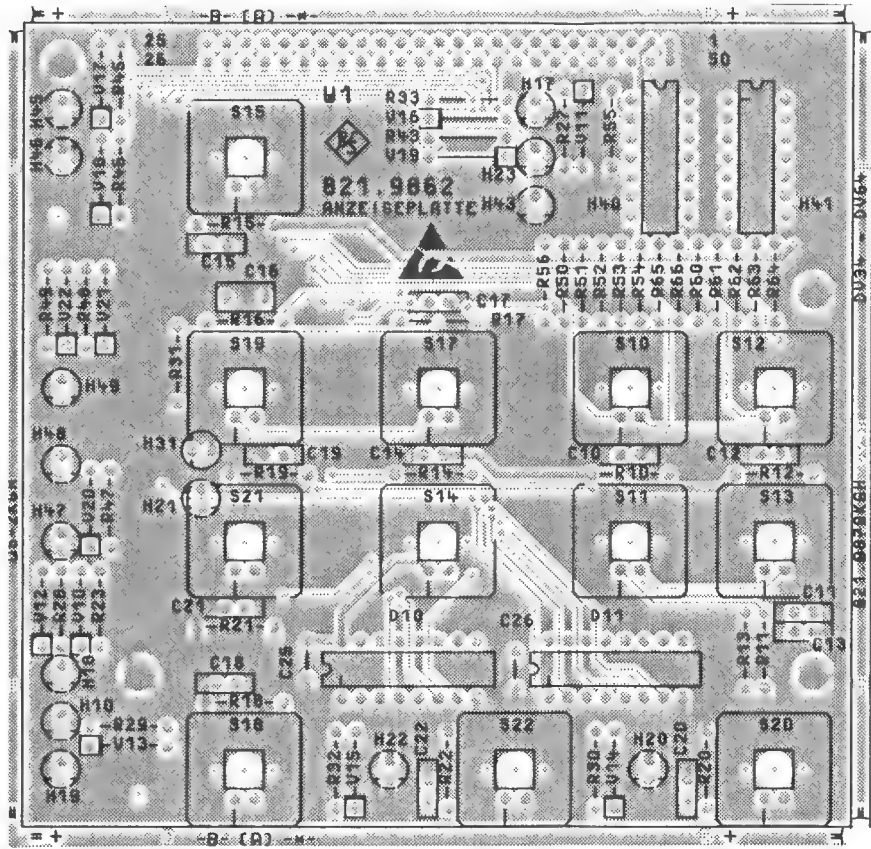
v 1 Bl

zu Gerät EMF

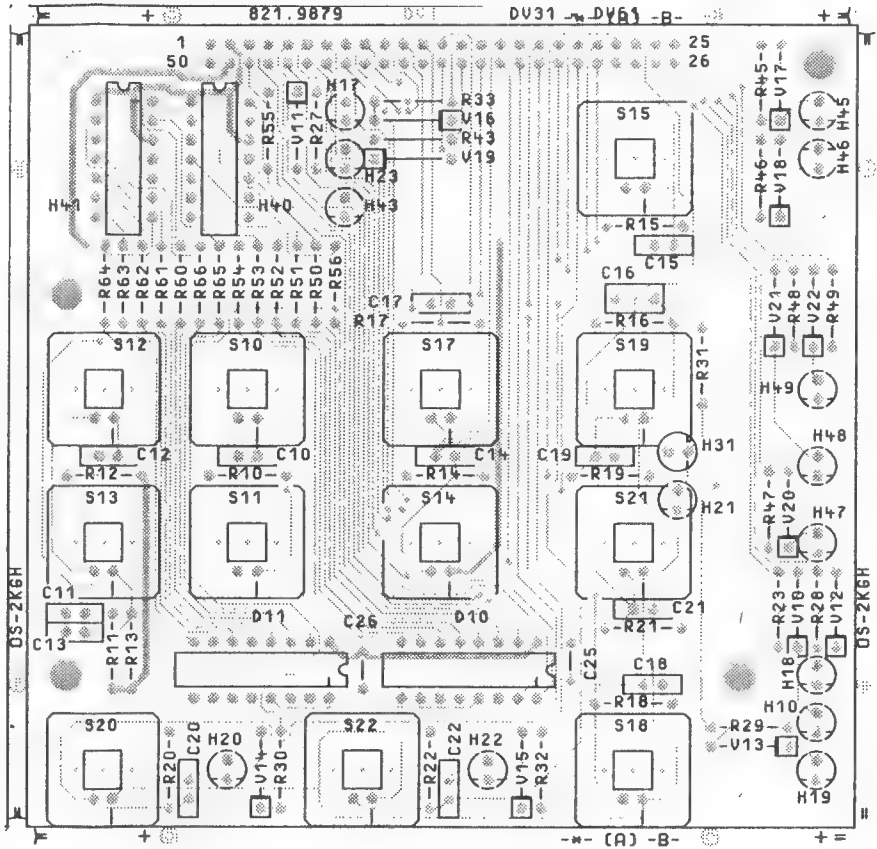
reg. V 821.4019 V

erste Z


Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



Ansicht und Leitungsführung Lötseite
View of tracks on solder side



VARIANTENERKLÄRUNG / VERSION
VAR 02 - GRUNDAUSFÜHRUNG / BASIC MODEL

B		07.87	OS	Maße ohne Toleranzangabe		Maßstab 1 : 1			
						Halbzeug, Werkstoff			
				2KGH	Tag	Name	Benennung		
				Bearb	07.87	OS	ANZEIGEPLATTE		
				Gepr			DISPLAY BOARD		
				Norm			Z		
				 ROHDE & SCHWARZ			Zeichn.-Nr.		Blatt-Nr.
							821.9862.01		2
And Zust	Anderungs- Mitteilung	Tag	Name	zu Gerät EMF			reg i V. 821.4019 V		erste Z
							ED		Bl

ACHTUNG: EGB!
Elektrostatisch gefährdete Bauelemente erfordern eine besondere Handhabung
ATTENTION ESD!
Electrostatic sensitive devices require a special handling

Für diese Unterlage behalten wir uns alle Rechte vor

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C10 ..14	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C15	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C16	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%	
C17 ..22	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C25	CC 100NF+-10%50V5K1200VIE CAPACITOR	CC 084.5350	UNION CARB	CK05BX104K	
C26	CC 100NF+-10%50V5K1200VIE CAPACITOR	CC 084.5350	UNION CARB	CK05BX104K	
D10	BL SN54LS247J 7SEGM.DECOD IC SEGMENT DECODER SN54LS	294.9673	TEXAS	SN54LS247J	
D11	BL SN54LS247J 7SEGM.DECOD IC SEGMENT DECODER SN54LS	294.9673	TEXAS	SN54LS247J	
H10	AF HLMP1503 LED GN RD3 LED	AF 252.5570	GEN. INSTR.	HLMP1503-1503-18/19	
H17	AF HLMP1503 LED GN RD3 LED	AF 252.5570	GEN. INSTR.	HLMP1503-1503-18/19	
H18	AF HLMP1503 LED GN RD3 LED	AF 252.5570	GEN. INSTR.	HLMP1503-1503-18/19	
H19	AF HLMP1401 LED GE RD3 LED	AF 235.4604	GEN. INSTR.	HLMP1401	
H20	AF HLMP1401 LED GE RD3 LED	AF 235.4604	GEN. INSTR.	HLMP1401	
H21	AF HLMP1503 LED GN RD3 LED	AF 252.5570	GEN. INSTR.	HLMP1503-1503-18/19	
H22	AF HLMP1401 LED GE RD3 LED	AF 235.4604	GEN. INSTR.	HLMP1401	
H23	AF HLMP1503 LED GN RD3 LED	AF 252.5570	GEN. INSTR.	HLMP1503-1503-18/19	
H31	AF HLMP1401 LED GE RD3 LED	AF 235.4604	GEN. INSTR.	HLMP1401	
H40	BP HDSP3531 1X 7SEGM RTR LED-DISPLAY	BP 815.8016	HEWLETT	HDSP3531/HKL:E,F	
H41	BP HDSP3531 1X 7SEGM RTR LED-DISPLAY	BP 815.8016	HEWLETT	HDSP3531/HKL:E,F	
H43	AF HLMP1503 LED GN RD3 LED	AF 252.5570	GEN. INSTR.	HLMP1503-1503-18/19	
H45	AF HLMP1401 LED GE RD3 LED	AF 235.4604	GEN. INSTR.	HLMP1401	
H46	AF HLMP1401 LED GE RD3 LED	AF 235.4604	GEN. INSTR.	HLMP1401	
H47	AF HLMP1503 LED GN RD3 LED	AF 252.5570	GEN. INSTR.	HLMP1503-1503-18/19	
H48	AF HLMP1503 LED GN RD3 LED	AF 252.5570	GEN. INSTR.	HLMP1503-1503-18/19	
H49	AF HLMP1503 LED GN RD3 LED	AF 252.5570	GEN. INSTR.	HLMP1503-1503-18/19	
R10 ..15	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D	
R16	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R17 ..22	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D	
R23	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D	
R27 ..33	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D	
R43	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D	
R45	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R46	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R47 ..49	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D	
R50 ..56	RL 0,35W 1,50KOHM+-1%TK50 RESISTOR	RL 083.0732	DRALORIC	SMA0207/1,50K-F-D	
R60 ..66	RL 0,35W 1,50KOHM+-1%TK50 RESISTOR	RL 083.0732	DRALORIC	SMA0207/1,50K-F-D	
S10 ..15	SB TASTER 1XA OHNE KNOPF PUSHBUTTON SWITCH	SB 238.3850	SIEMENS	STB11 M.LED-LOECHERN	

ROHDE & SCHWARZ	AI	Datum Date	Schaltteilleiste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	07	0188	ED ANZEIGEPLATTE	821.9862.01 SA	1+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
S17 ..22	SB TASTER 1XA OHNE KNOFF PUSHBUTTON SWITCH	SB 238.3850	SIEMENS	STB11 M.LED-LOECHERN	- ENDE -
V10 ..22	AD 1N4448 75V OA15 UDI# DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
W1	DX KABEL	821.9779			

ROHDE & SCHWARZ	AI	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	07	0188	ED ANZEIGEPLATTE	821.9862.01 SA	2-



ROHDE & SCHWARZ

Unternehmensbereich
Rundfunk- und Fernsehtechnik

Circuit Description

TV Test Receiver

EMF ... Motherboard

821.8514

Contents

1	AF Processing	
1.1	Sound Demodulation	1.1
1.2	Squelch Muting Circuit	1.1
1.3	AF Amplifier	1.1
1.4	Stereo / Sound 1 / Sound 2 Identification	1.1
2	Processing of Measured Values	
2.1	Deviation	1.2
2.2	RF Input Voltage V_{in}	1.2
2.3	V_{video}	1.2
2.4	Measurement-point Selector	1.2
3	Pulse Processing	
3.1	Sync Separator	1.3
3.2	Sync Sampling Pulse Processing	1.3
3.3	High Sampling Pulse Processing	1.3
3.4	Zero-reference Pulse Processing	1.4
3.5	Control Voltage Generation	1.4
4	Selection of Operating Modes	
4.1	Synchronous/Envelope Switchover	1.5
4.2	Zero-reference Pulse	1.5
4.3	Auto/Manual Switchover	1.5
4.4	Mono 1/L-2/R Switchover	1.5
5	Miscellaneous	
5.1	Heater for IC N101	1.5
5.2	Q Signal Amplifier	1.5
6	Coding Options	1.6

1 AF Processing

1.1 Sound Demodulation

See 821.8514 S, sheet 5

The quasi-parallel sound demodulator N261 (N264) is used to obtain a difference frequency of 5.5 MHz (5.74 MHz) from the vision IF of 38.9 MHz and the sound IF of 33.4 MHz (33.16 MHz). The sound IF is applied via the ceramic filter Z301 (Z401) to input 11 (17) of the FM demodulator N266. The complex bandpass at N266.6/7 (3/4) ensures exact FM demodulation. The AF signal is available at N266.8 (2) and is routed via lowpass L275/C296 (L295/C346) to the AF amplifier (see 1.3).

1.2 Squelch Muting Circuit

See 821.8514 S, sheet 5; note: terms in brackets apply to sound 2

The respective channel is muted if a sound carrier fails. The sound difference frequency is coupled out via C273 (C323) and amplified via V301/V302 (V308/V311). The parallel resonant circuit L264/C276 (L284/C326) is adjusted to a maximum gain of V302 (V311) at 5.5 MHz (5.74 MHz). V303 (V312) rectifies the sound difference frequency and charges C281 (C331). N262A (B) compares the actual value of the rectified sound difference frequency with a reference voltage from R321/R323. If the actual value at N262A.3 (N262B.5) drops below approx. 2.5 V, N262A.1 (N262B.7) becomes Low. This Low signal disables the AF via N266.12 (16) and indicates the absence of a sound carrier on the LED H108 (H107) and by a message to the remote interface following inversion with N263B (C).

The AF is disabled via V306 (V316) at N266.12 (16) in order to suppress interfering noise when changing the channel. The squelch function is switched off with jumper X327 (X331) in position 2-3.

1.3 AF Amplifier

See 821.8514 S, sheet 6; note: terms in brackets apply to sound 2

N267A (B) amplifies the AF signal with the set gain and applies it to the AF dematrix N268/N271A. The MOS switch applies the sound 2 signal to the negative input of N271A in mono mode and the signal is mixed with sound 1 at the positive input. Levelling is performed by R401/402. C362 (C415) produces the deemphasis and can be disabled using jumper X409 (X415). The resonant circuit C366/L348 (C396/L371) disables the pilot tone of 54.688 kHz. The AF signal is amplified by N272 (N276) and is available as a low-impedance output signal. N277 switches sound 1 or sound 2 to the loudspeaker amplifier N274 via the loudspeaker control R117.

1.4 Stereo / Sound 1 / Sound 2 Identification

See 821.8514 S, sheet 6

The 54.688 kHz pilot tone is amplified by N267D, selected by the bandpass L372/C405/L373 and applied to the identification decoder N279.13. The pilot tone is modulated with the two identification frequencies of 117.5 Hz (dual sound) and 274.1 Hz (stereo). The identification frequencies are compared with the internal reference frequencies of the N279 and result in

- * a stereo indication via N279.1
- * a dual-sound indication via N279.2 and N281B
- * the corresponding messages to the remote interface via N279.2, N281B and N282B
- * switchover of the AF matrix via N279.3.

The absence of the pilot tone (mono) is indicated by LED H103 via N281A and signalled by N282C to the remote interface.

2 Processing of Measured Values

2.1 Deviation

See 821.8514 S, sheet 6

N269 applies sound 1 or sound 2 to N271C via the 250-kHz trap L347/C352. V392 rectifies the AF and charges C353. N271D drives the meter, and R397 can be used for calibration.

2.2 RF Input Voltage V_{in}

See 821.8514 S, sheet 2

The vision IF comes from the RF section in RF mode via V72/V74 and from the IF input in IF mode via V82/V84 and is amplified by V101/V102. The IF is selected by bandpass L101/C101/C102, amplified by V103 and demodulated by N101. The video signal is applied to the MOS switch N104 which is only closed during the H sync pulse by the sampling pulse. Sampling is necessary since the sync pulse is constant independent of the picture contents and is therefore a measure of the RF input voltage. C128 serves as a memory, and its charge corresponds to the measured value. The output of N91B is

- * applied to X109.6, and serves as a signal for "SEARCH STOP" identification
- * amplified by N106A/B/C and applied to the measurement-point selector D101.

The indication sensitivity is set using R133. The indicated value can be corrected with jumper X119 in position 1-2 by applying a defined voltage with inserted attenuator. The output of N106A

- * drives the meter via D101
- * serves as the actual value for the automatic RF attenuation selection in the synthesizer (X109.22).
- * applied to X2.23

2.3 V_{video}

See 821.8514 S, sheet 3

This measured value is used for the optimal setting of the manual control gain to the reference mark or for checking the automatic gain control. The video signal comes from the video output amplifier and is applied to N111.3 via X105.18, amplified, and then applied to the MOS switch N112. N112 only conducts for the duration of the sync sampling pulse. N113A amplifies the signal and divides it to the negative inputs of N113C and N113B. N113B amplifies the signal for the meter. The zero adjustment is carried out using R174 (definition of operating point for N113B). The indication sensitivity is set using R183 (calibration).

2.4 Measurement-point Selector

See 821.8366 S, sheet 1

The meter P101 indicates the following measured values as selected:

- * Deviation of sound 1/2
- * V_{video} - level of video signal
- * V_{in} - level of RF input signal or external IF signal.

The various measured voltages are present at the MOS switches D101.1, D101.4, D101.8 and D101.11. These are driven by the RS flipflops D4043. The respective flipflop is set by the measurement-point selection keys. The remaining flipflops are reset via the diodes V112/113/114. This ensures that only one signal is connected to the meter at a time. The measurement point selected is indicated by the LEDs H121 to H124. The transistors V120 to V123 are LED drivers. The flipflops in D100 have a battery back-up so that the selected operating mode is stored in the event of a voltage failure.

3 Pulse Processing

3.1 Sync Separator See 821.8514 S, sheet 3

The video signal comes from the envelope demodulator via X105.11 and is applied to N204.11. The following signals are present at the outputs of N204:

- * Pin 6: H oscillator
Approx. 15 kHz signal present here is synchronized to 15625 Hz when a TV transmitter is received.
- * Pin 7: 15-kHz identification
A High signal is present if a transmitter is detected.
- * Pin 9: sync
Sync pulses are present here when a TV transmitter is received.

The frequency of the internal line oscillator is set using R213.

3.2 Sync Sampling Pulse Processing See 821.8514 S, sheet 3

The monoflop N202A is started at pin 4 with the High sync pulse from the sync separator N204. The pulse width is determined by the time constant at pin 2:

- * Search mode (transmitter not yet found)
High signal from X109.7 connects V206 through and applies N202A.2 to ground. A High signal is present at N202A.6 until a transmitter is found.
- * Normal mode (transmitter received)
The sync sampling pulse is set to approx. 1 μ s by the time constant R204, C208.

3.3 High Sampling Pulse Processing See 821.8514 S, sheet 3

The High sampling pulse is used to sample the Q signal in the IF section. The monoflop N203A is started at pin 5 by the sync pulse from the sync separator N204. The pulse width which is determined by the time constant R203, C205 is approx. 33 μ s, and thus corresponds to half a line. Because of the feedback from N203A.6 to pin 4, the subsequent monoflop N203B can only be started following a complete line. This is necessary since the preequalizing and postequalizing pulses of the vertical blanking interval (1/2 lines) would result in generation of a High sampling pulse with double the repetition frequency. The pulse width is determined by the time constant R202, C204 and is approx. 1 μ s if a transmitter is received. The High sampling pulse is present at N203B.10 and X105.6.

3.4 Zero-reference Pulse Processing

See 821.8514 S, sheet 4

The zero-reference pulse is used to sample a defined line in the field. Sync pulses from the sync separator N204 are integrated and synchronize the vertical oscillator N231A. The V pulse thus obtained is used to start the monoflop N232A at pin 5. The pulse width is set using R243 and is approx. 10 to 25 lines. The monoflop N202B is reset by the positive edge at this pulse and can only be started with the next High sync pulse. The resulting pulse at N202B.10 is used to start a further monoflop N233B at pin 12 with a delay of approx. 6 s. The pulse width is determined by the time constant R241, C236 and is approx. 52 μ s (visible line). This procedure can be used to exactly search for a particular line. The zero-reference pulse is amplified by V233, V234 and applied further to the IF section via X105.23. The zero-reference pulse can also be produced externally via X112. V236 operates in position 1-2 of jumper X251 as an inverter.

3.5 Control Voltage Generation

See 821.8514 S, sheets 3 and 7

The video signal switched by the sync sampling pulse (see data processing of V_{video}) is compared with a reference voltage by N113C and applied to N296.4 (821.8514 S, sheet 7). The control voltage reference is the operating voltage of -12 V divided by R176, R177 and R178. A Low signal appears at N204.7 (P119) if a signal without horizontal pulses is received or measured. V191 thus switches through and makes the reference voltage more positive via R194, N113C. The gain of the IF input amplifier is thus reduced.

4 Selection of Operating Modes

See 821.8366 S, sheet 1, 821.8514 S, sheets 7 and 6

4.1 Synchronous/Envelope Switchover

The D flipflop N291A is set or reset at the clock input pin 3 by key S102. N291A and N293A have a battery back-up, i.e. the selected state is stored in the event of a voltage failure (Low signal at N293A.13) and can only be changed when the voltage has been returned. The switchover signal SY/ENV (synchronous/envelope) is applied to the MOS switch N283.3 which selects between internal and external synchronous/envelope switchover. In the case of external control, H102 is driven via N285C. The SY/ENV switchover signal is decoupled by N285A.

N285A drives the LEDs H113 (synchronous) and H114 (envelope) on the front panel. The switchover signal is applied to the IF section via X105.8 and is used there to select the type of demodulation.

4.2 Zero-reference Pulse

The description for the synchronous/envelope switchover applies analogously. The switchover signal drives the LED H117 via N285B and enables zero-reference pulse processing via N285D.

4.3 Auto/Manual Switchover

Section 5.1 applies in an analogous manner up to storing of the operating mode. The AUTO/MANUAL switchover signal is applied to N295A.3 via N294D and N294C, where manual gain control is only active in internal mode since N294D.11 is dependent on N294B.4. The keys S101, S102 and S103 are enabled by a High signal at N294B.4 (internal).

4.4 Mono 1/L-2/R Switchover

Section 5.1 applies in an analogous manner up to storage of the operating mode. The switchover signal is applied to N295B.5. N295B.7 drives the LEDs H115 (Mono 1/L) and H116 (Mono 2/R) on the front panel. The output N293D.10 drives the MOS switch N277.2. Thus sound 1/L or 2/R is connected to the loudspeaker.

5 Miscellaneous

5.1 Heater for IC N101

See 821.8514 S, sheet 2

The IC N101 is heated constantly to eliminate its temperature response. V111 and V112 operate as a differential amplifier. The NTC resistor R123 is fitted next to the heater transistor V113 and reduces the current through V111 as the temperature rises so that the current through V113 is also cut down resulting in reduced heating power.

5.2 Q Signal Amplifier

See description of IF Section 821.7518

6 Coding Options

Coding jump.	Circuit diagram	Position	Function
X 121	821.8514 S,sh.2	1-2 2-3	Normal operation Sound traps OFF
X 122	"	1-2 2-3	Normal operation Switchover to IF input disabled
X 127	821.8514 S,sh.3	1-2 2-3	Normal operation Control voltage not sampled
X 129	"	1-2 2-3	Normal operation Internal H oscillator free-running (adjustment)
X 131	"	1-2 2-3	Normal operation Adjustment, see X 129
X 251	821.8514 S,sh.4	1-2 2-3	Normal operation, inverter for external zero reference pulse ON external zero-reference pulse is not inverted
X 325 sound 1	821.8514 S,sh.5	1-2	Normal operation
X 329 sound 2	"	I-2open	Input or test option of sound difference frequency, pin 3 = ground
X 327 sound1	821.8514 S,sh.5	1-2	Normal operation
X 331 sound2	"	2-3	Squelch disabled
X 405 sound1	821.8514 S,sh.6	1-2	Normal operation
X 407 sound2	"	I-2open	Input or test option of AF, pin 3 = ground
X 409 sound 1	"	1-2	Normal operation
X 415 sound 2	"	I-2open	Deemphasis OFF
X 411	"	1-2 2-3	Normal operation Internal loudspeaker switched off, AF output to X2.20 (external connector)
X 413	"	1-2 2-3	Normal operation SYNCHR/ENVEL and ZERO REFERENCE ON for external operation, REMOTE LED 67 lights up

Summary of circuit documents for motherboard

Block diagram 821.4019 S, sheet 2 in Register 3

Circuit diagram 821.8514 S, sheet 1

External connector X2, power supply connector X21

Circuit diagram 821.8514 S, sheet 2

RF/IF switchover, measurement of RF input voltage V_{IN} , display driver, correction of display, AFC, heater for IC N101

Circuit diagram 821.8514 S, sheet 3

Sync sampling, control voltage, display of "No vision carrier", H sampling pulse generator, sync separator with 15-kHz identification, H oscillator

Circuit diagram 821.8514 S, sheet 4

Vertical oscillator, zero-reference pulse generator, Q signal amplifier

Circuit diagram 821.8514 S, sheet 5

Quasi-parallel sound demodulator, squelch, FM demodulator

Circuit diagram 821.8514 S, sheet 6

AF amplifier, sound 1/2/stereo switchover, identification, AF output stage, display driver for zero reference, SYNCHR/ENVEL, EXTERNAL, measured-value processing for deviation display

Circuit diagram 821.8514 S, sheet 7

Storage of operating states: zero reference, SYNCHR/ENVEL, AUTO/MAN, MONO/SOUND 1/SOUND 2

Circuit diagram 821.8514 S, sheet 8

Explanation of models

Board layouts 821.8514, sheets 2 and 3

Motherboard

Parts list 821.8514 SA, sheets 1 to 35

Motherboard

Circuit diagram 821.8366 S, sheet 1

Display board: LEDs, operation keys, loudspeaker, volume control, manual/auto control voltage

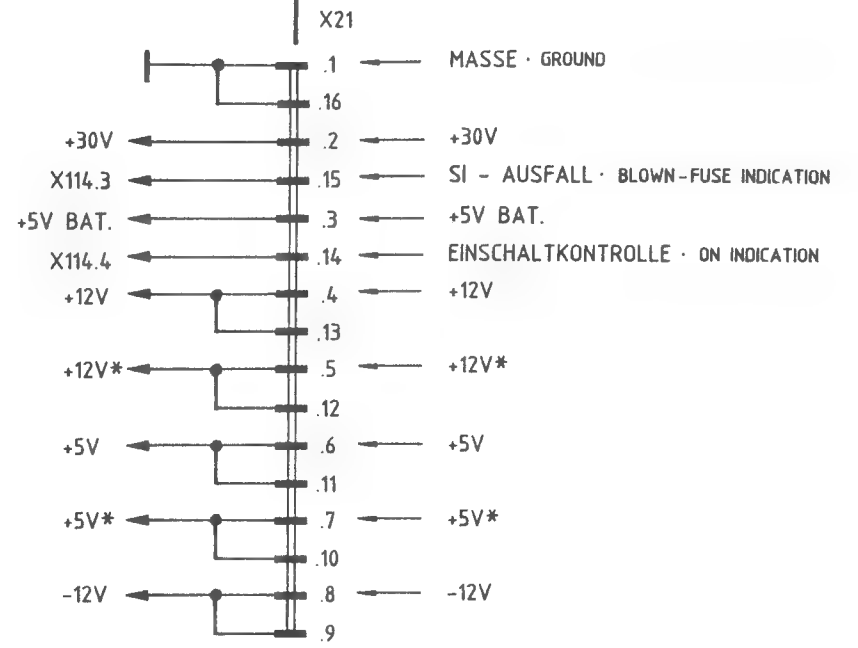
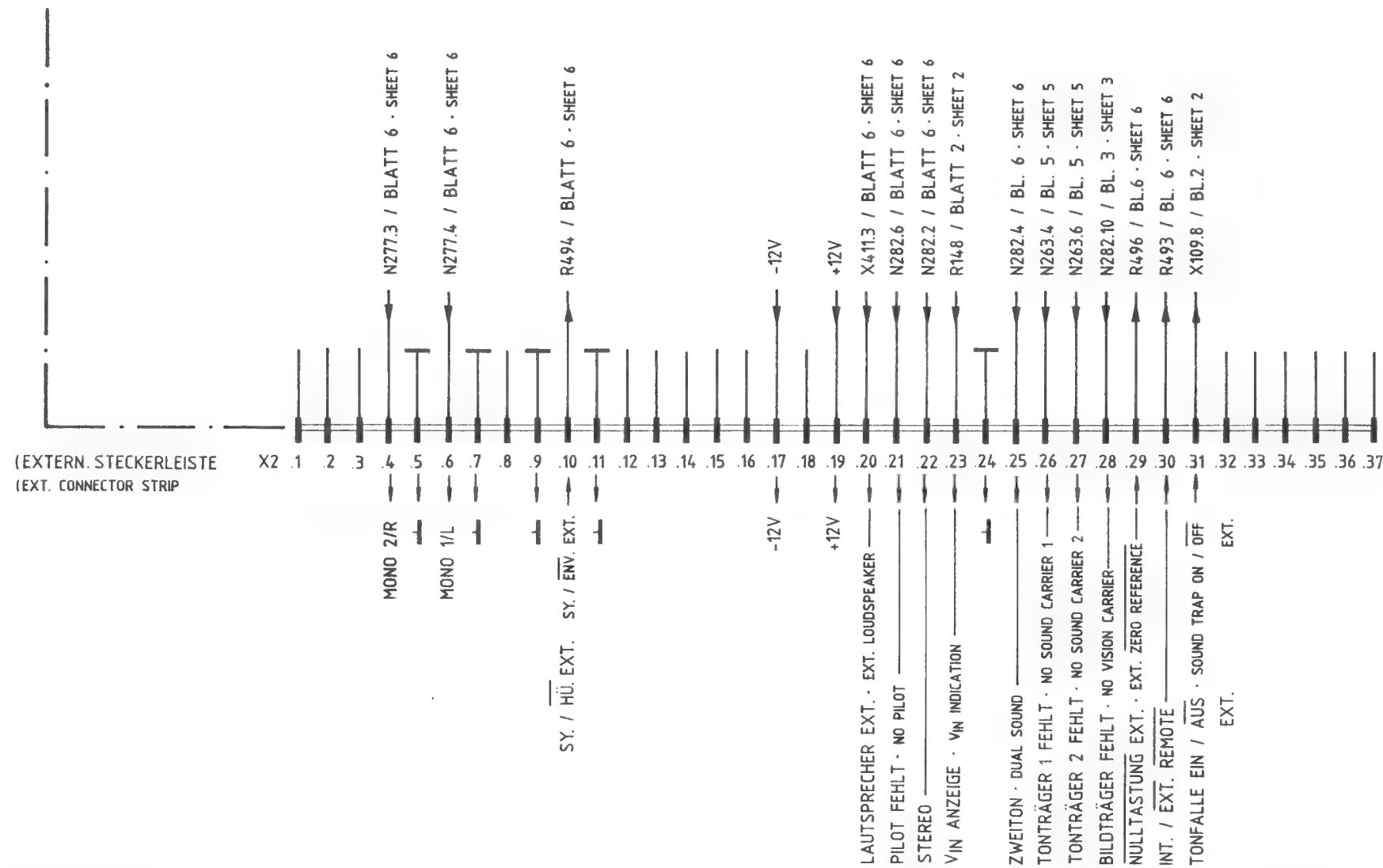
Board layout 821.8366, sheet 2

Display board

Parts list 821.8366 SA, sheet 1 to 3

Display board

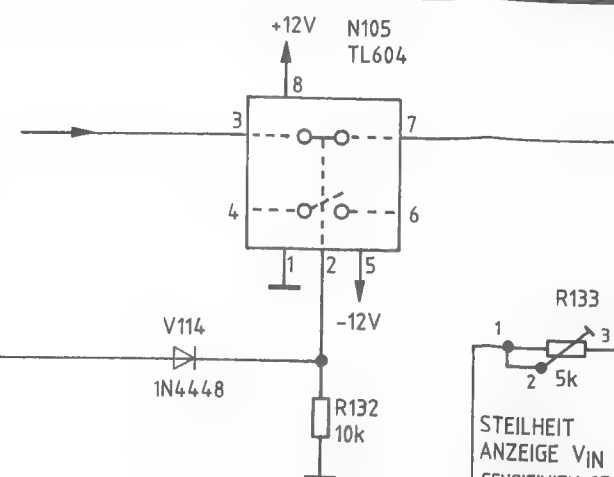
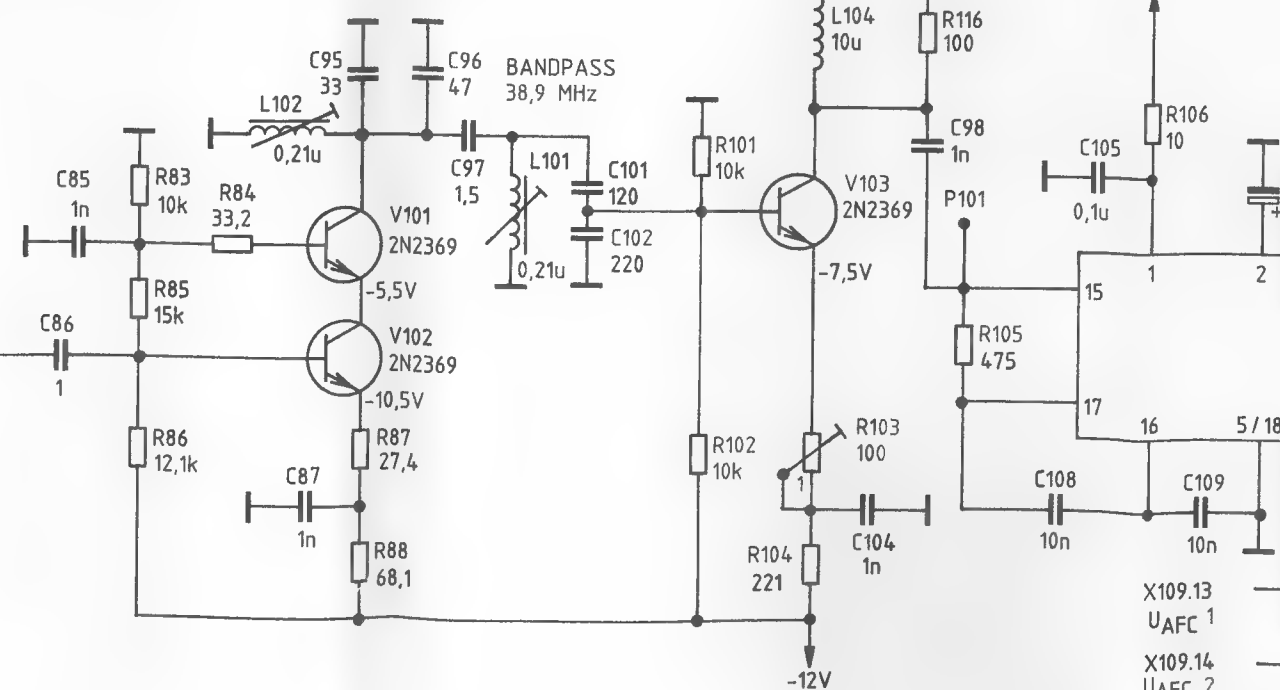
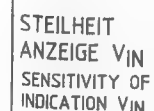
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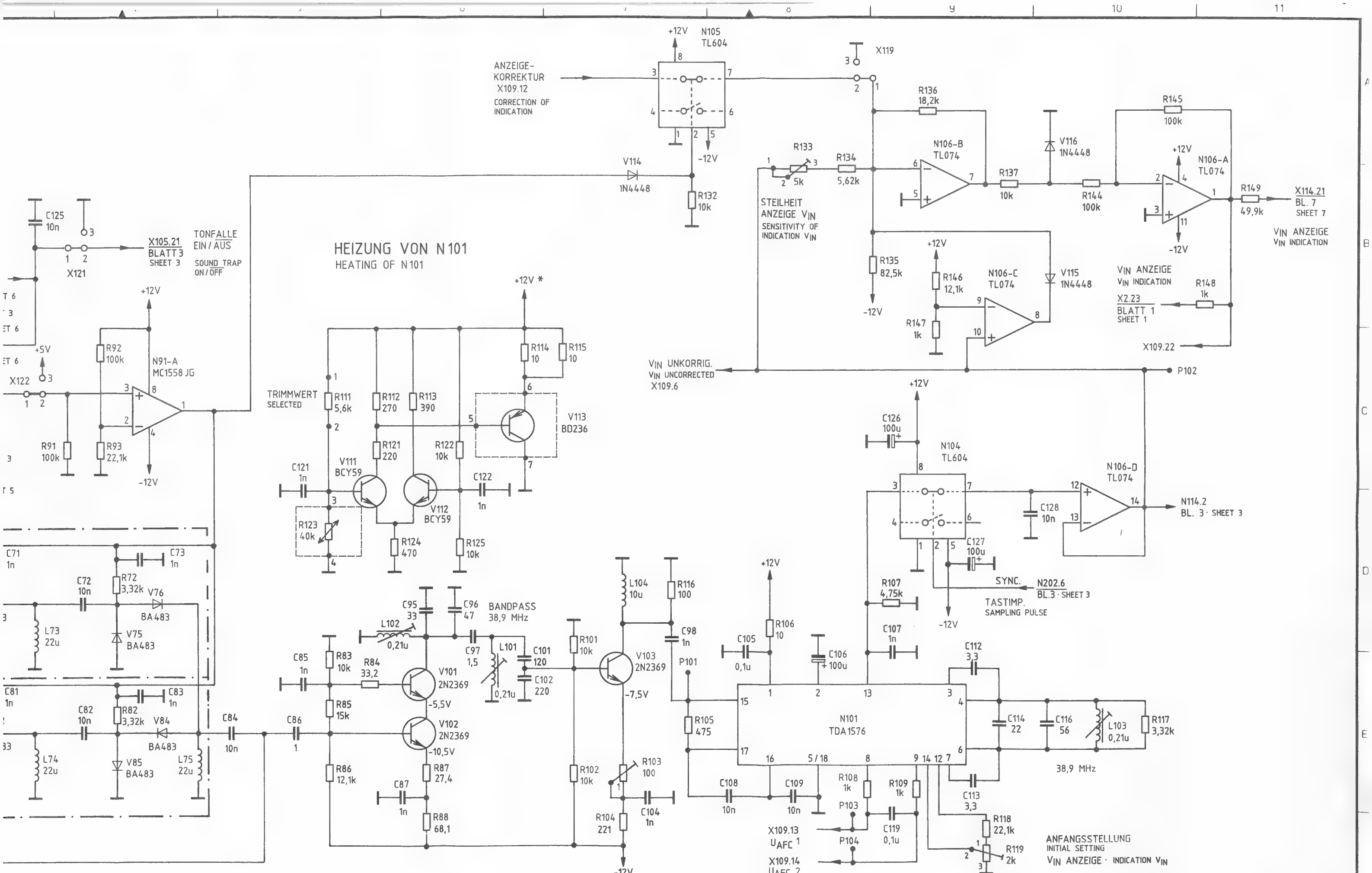


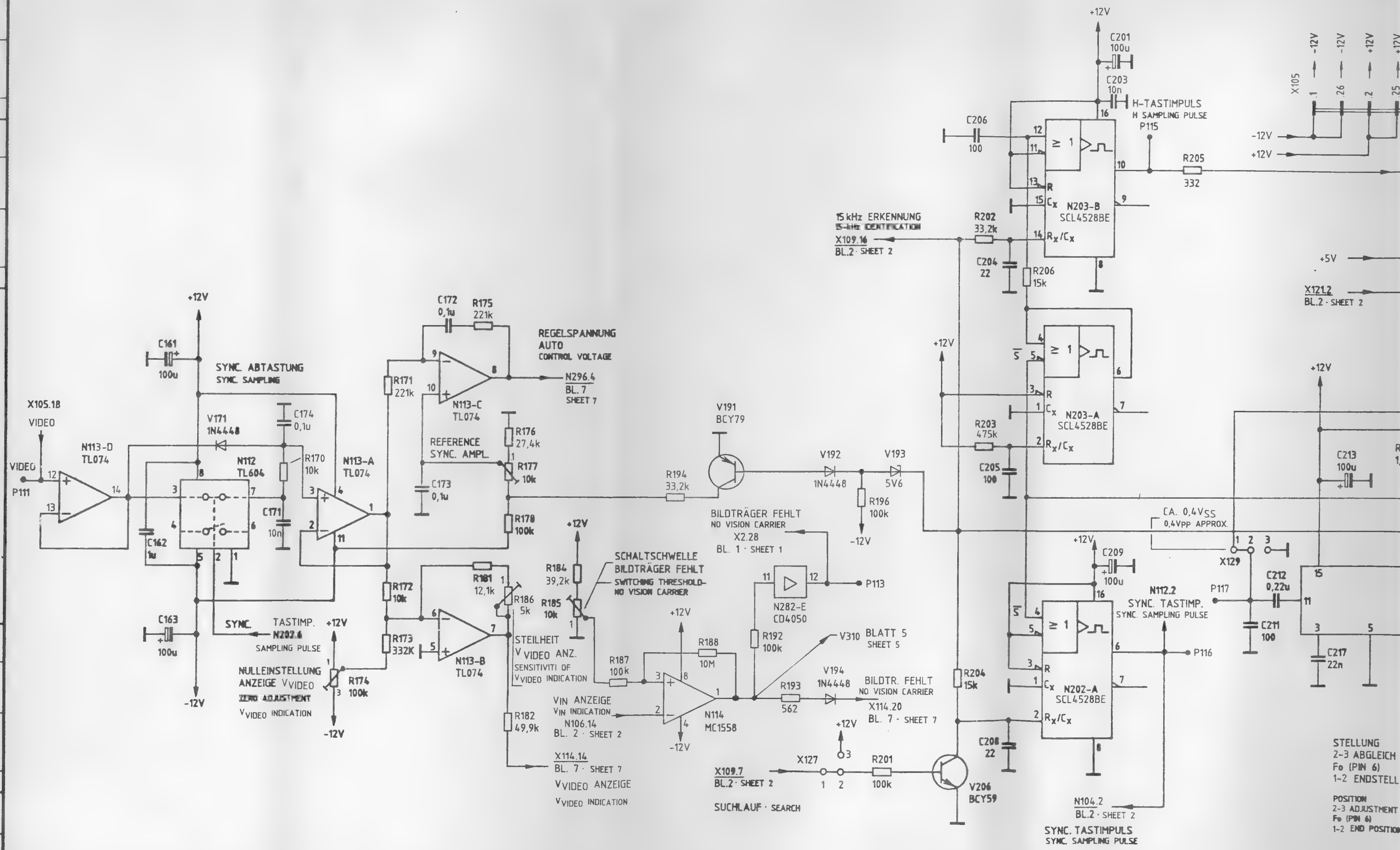
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								Gepr.			CIRCUIT DIAGRAM OF MAIN BOARD		1
And Zust	Anderungs-Mitteilung	Datum	Name	And Zust	Anderungs-Mitteilung	Datum	Name	Norm			zu Gerät: EMFT	reg. V. 821.4019 V	erste Z

Zeichn.-Nr.		8514 S 01		And. Mittig Nr.	Datum	Name
2 KGH	Datum	Name	A	39285	10.87	PI
gezeichnet	6.86	BA	B	40163	3.88	PI
beeinflusst	6.86	RP				
geprüft						
normgepr.						

PF 095.4109-0378

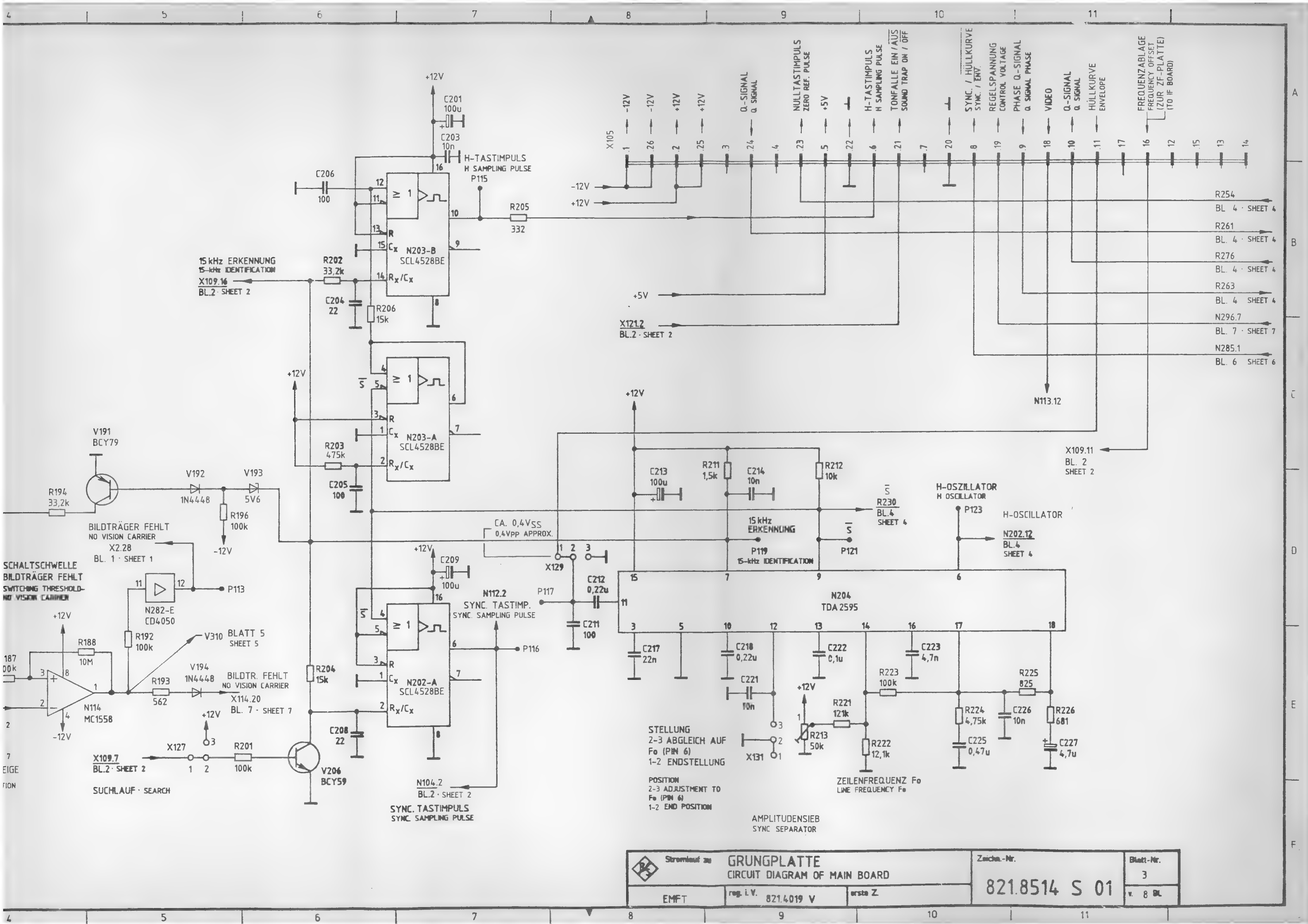






STELLUNG
2-3 ABGLEICH
Fo (PIN 6)
1-2 ENDSTELLUNG

POSITION
2-3 ADJUSTMENT
Fo (PIN 6)
1-2 END POSITION

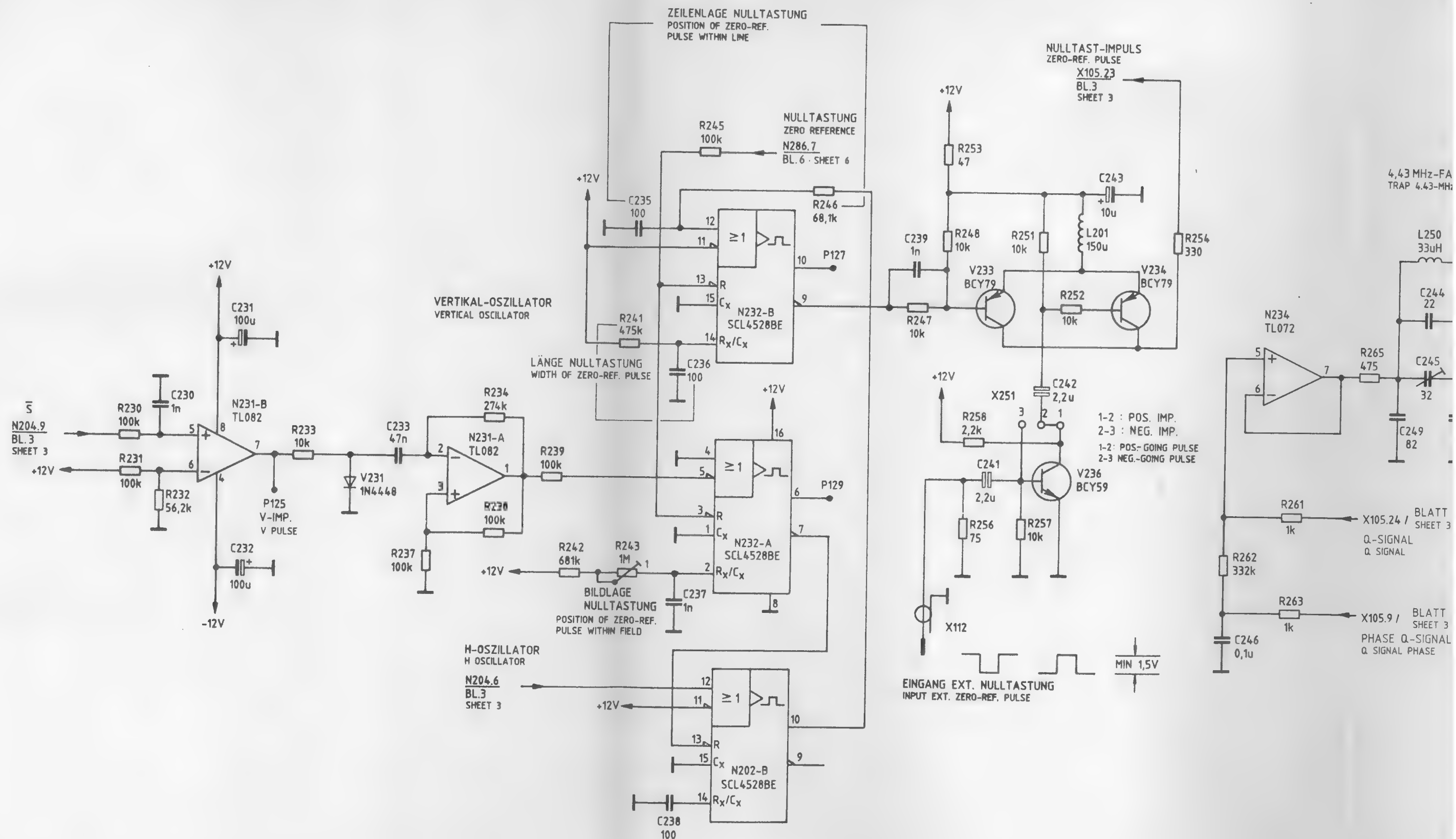


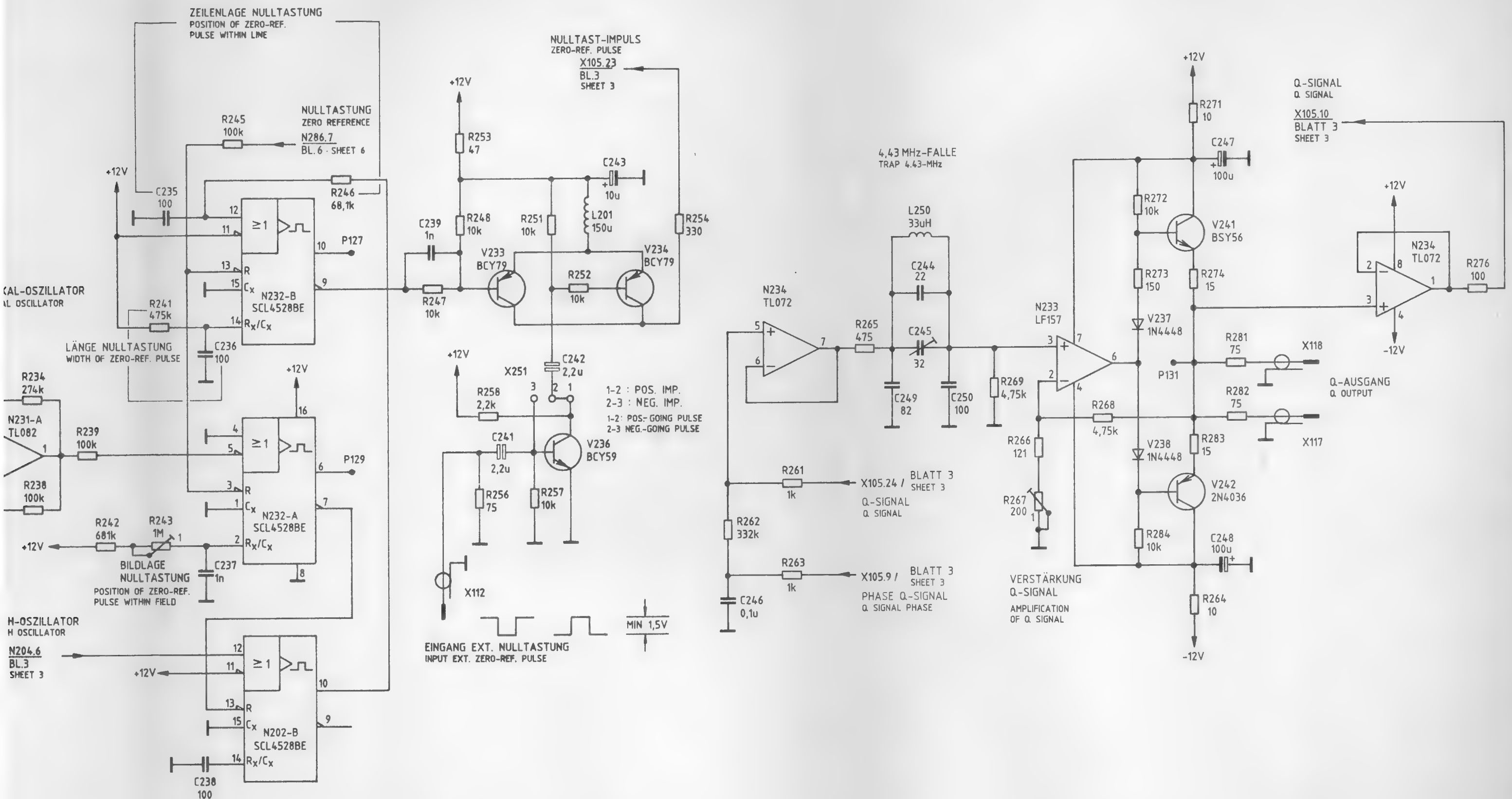
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ROHDE & SCHWARZ

Zeichn.-Nr.		8 2 9514 S 01		Name		PI	
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	bearbeitet	6.86					
	geprüft						
	freigegeben						

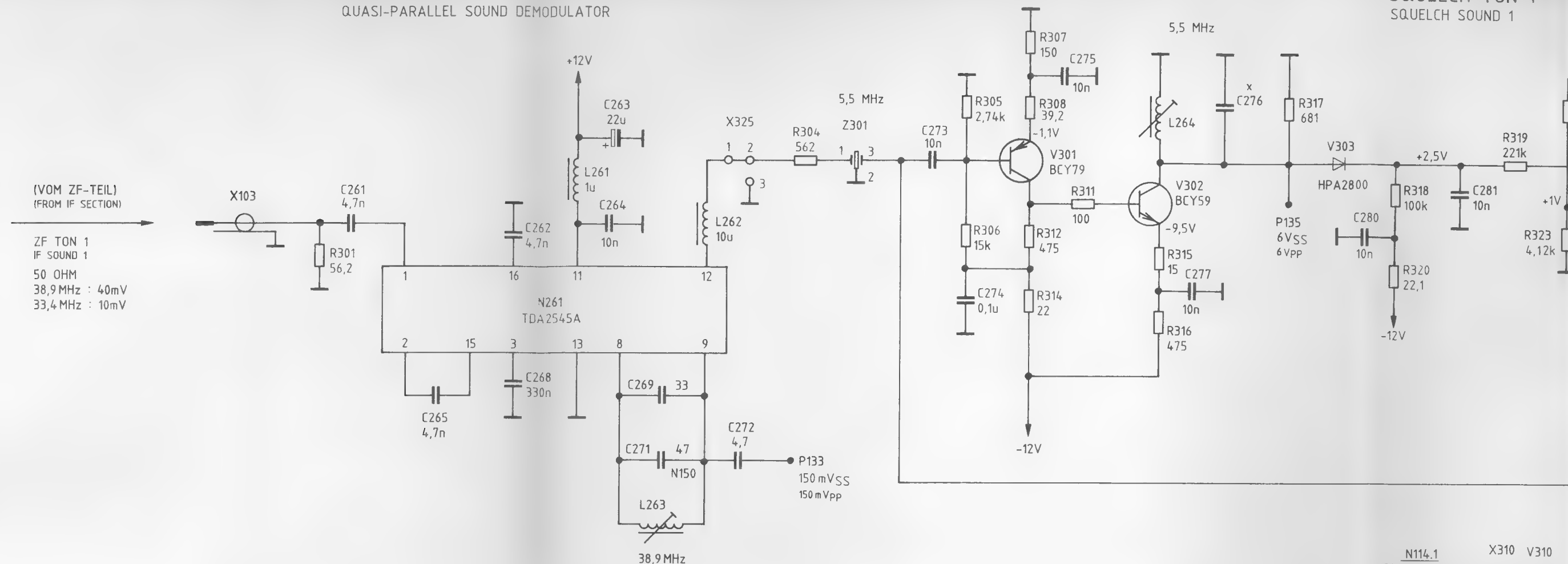
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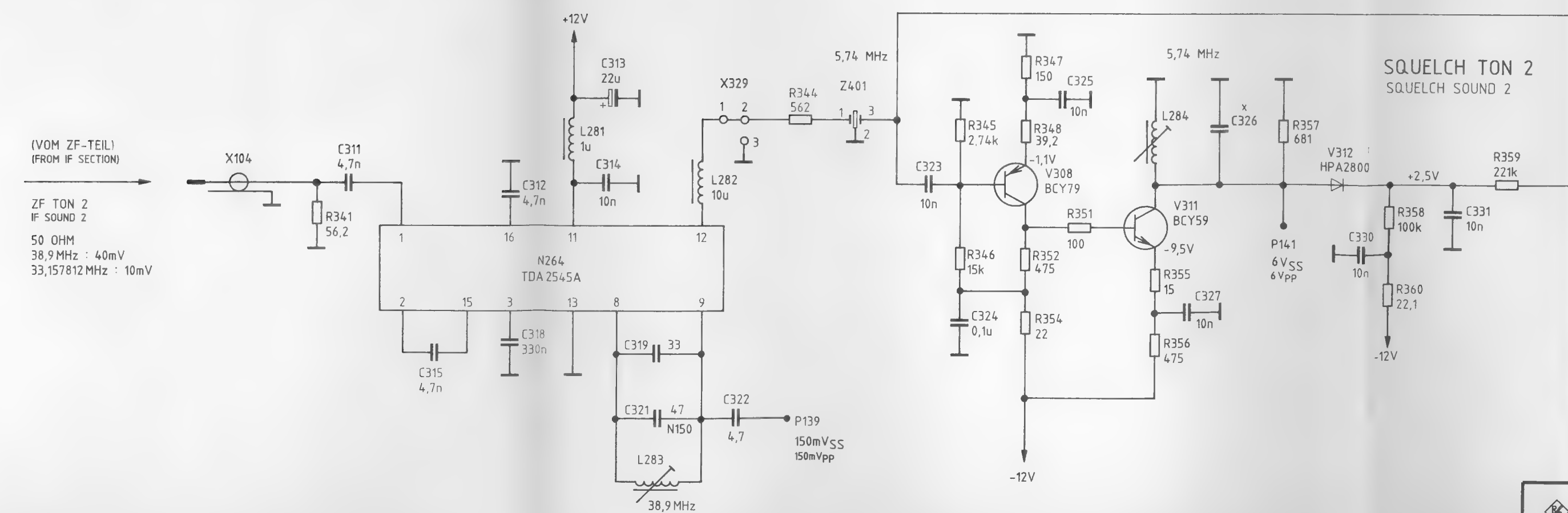


QUASI - PARALLELTON - DEMODULATOR QUASI-PARALLEL SOUND DEMODULATOR

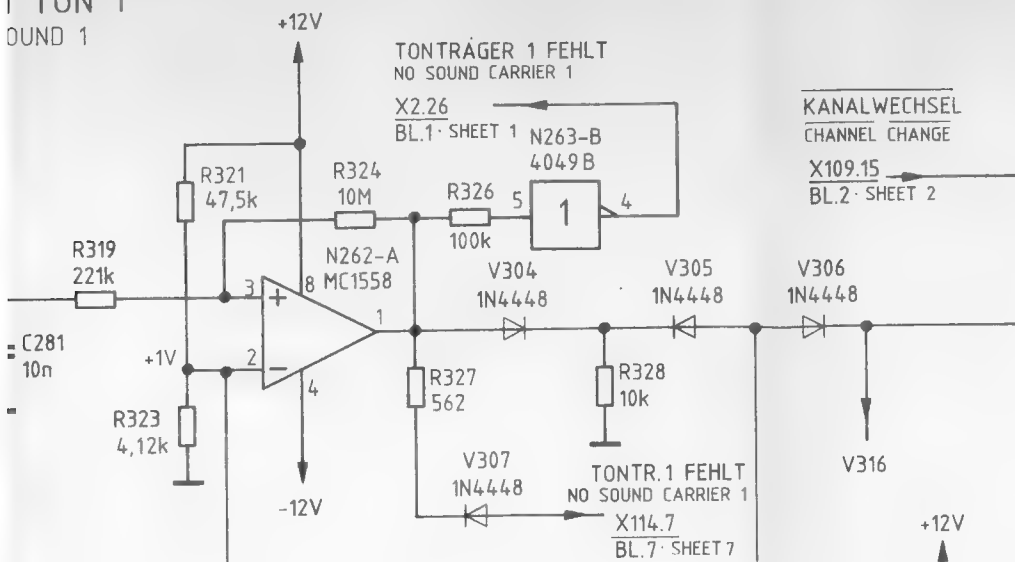
SQUELCH TON 1 SQUELCH SOUND 1



SQUELCH TON 2 SQUELCH SOUND 2



TON 1
OUND 1

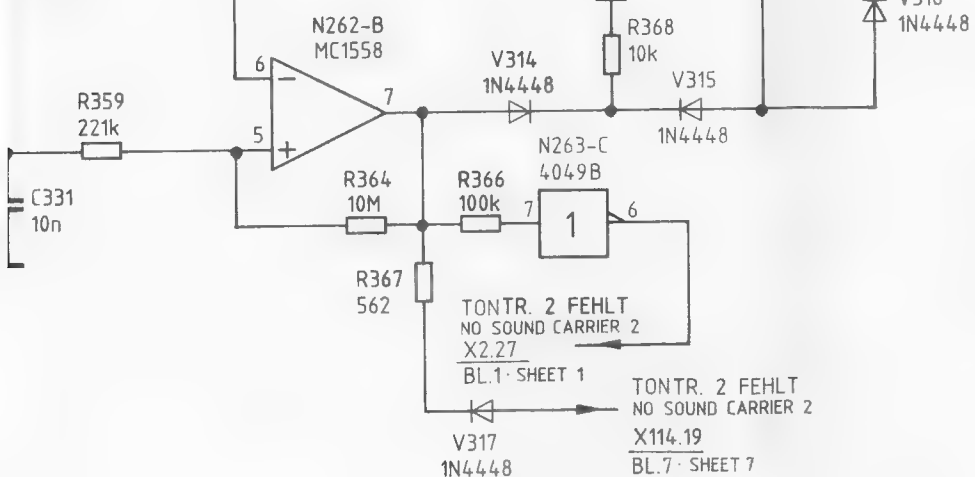


FM - DEMODULATOR

FM DEMODULATOR

X310 V310
FEHLT
RIER

H TON 2
SOUND 2

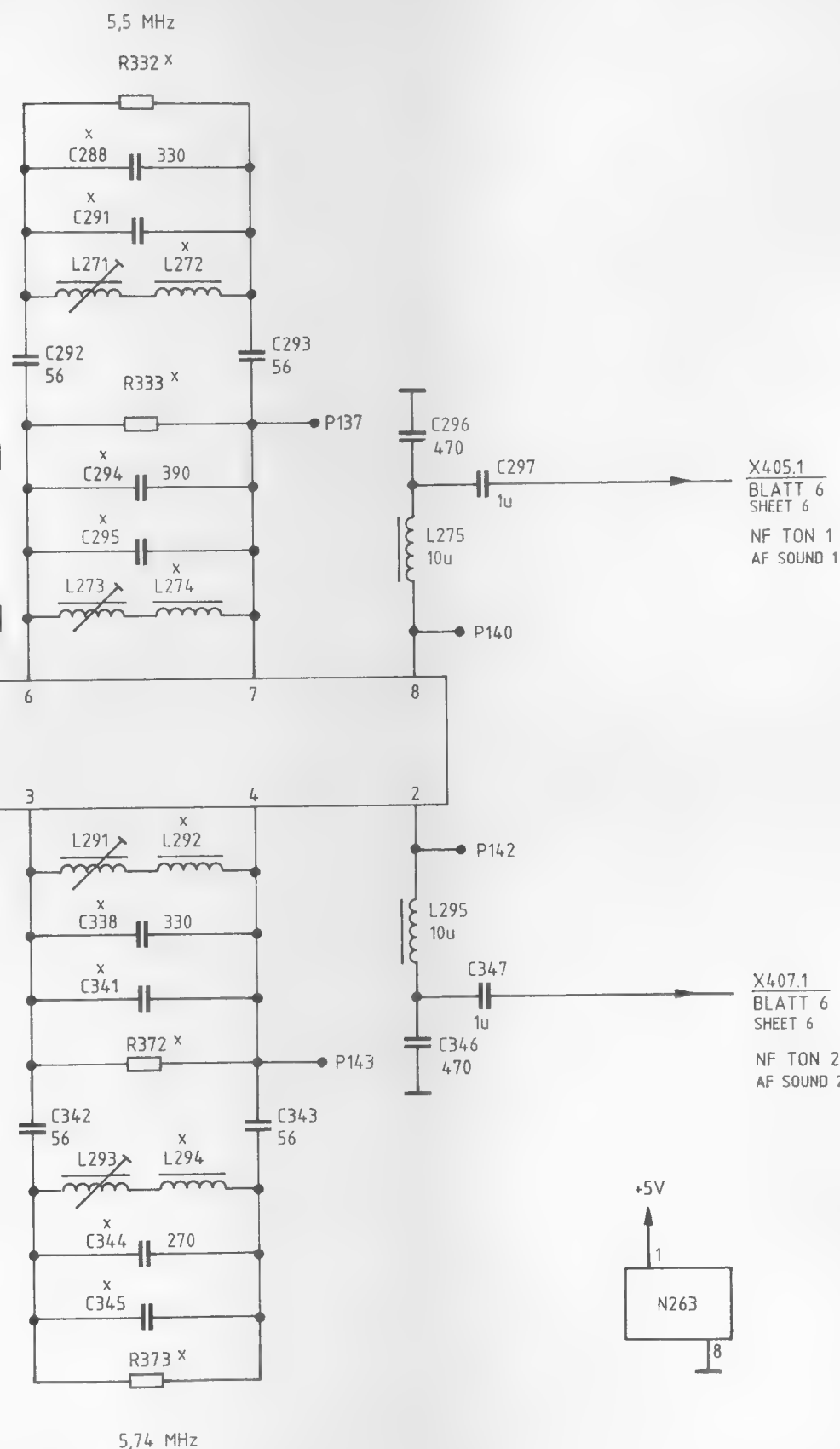


KANALWECHSEL
CHANNEL CHANGE

X109.15
BL.2 SHEET 2

TONTR. 1 FEHLT
NO SOUND CARRIER 1
X114.7
BL.7 SHEET 7

TONTR. 2 FEHLT
NO SOUND CARRIER 2
X2.27
BL.1 SHEET 1
TONTR. 2 FEHLT
NO SOUND CARRIER 2
X114.19
BL.7 SHEET 7



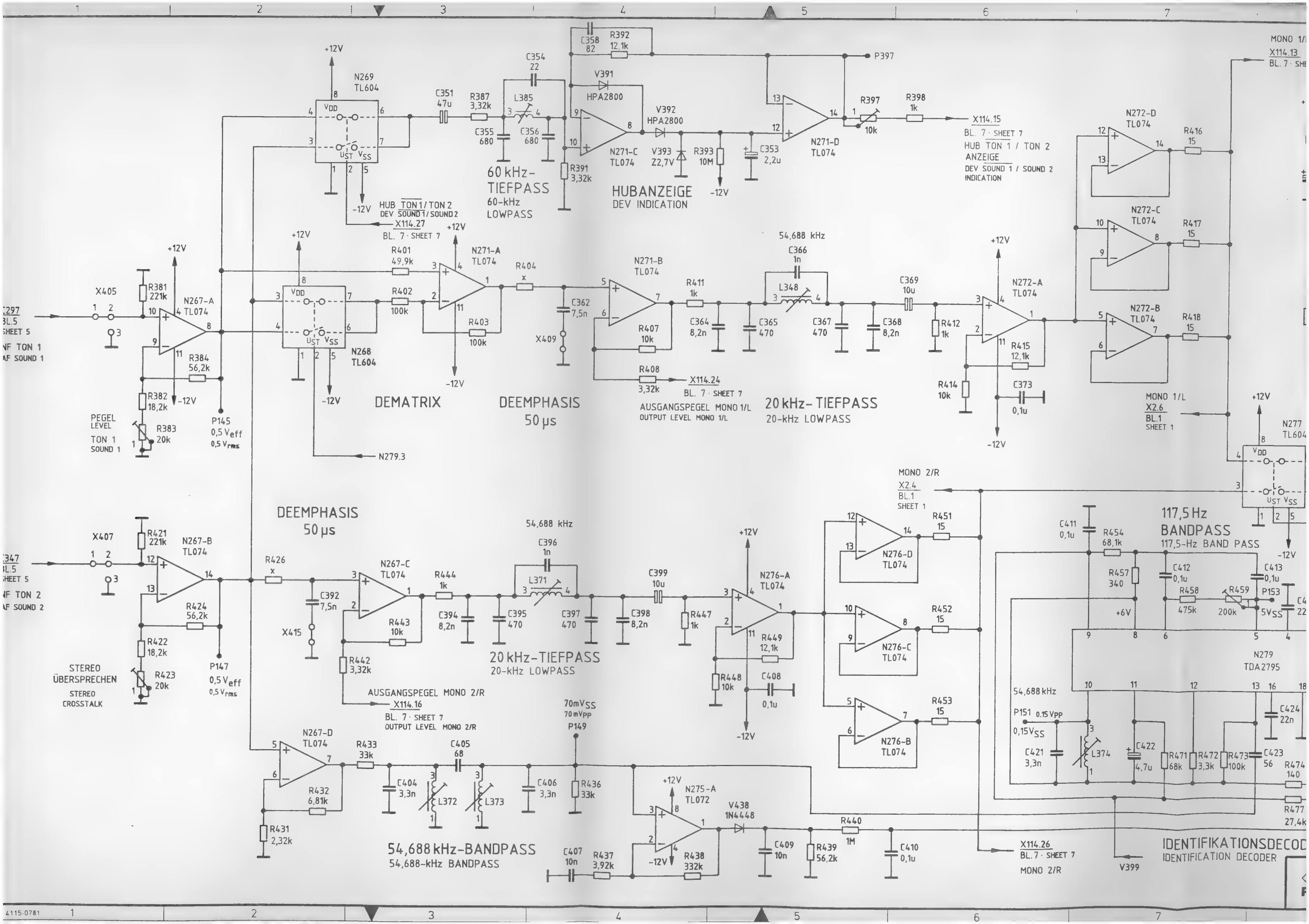
X405.1
BLATT 6
SHEET 6
NF TON 1
AF SOUND 1

X407.1
BLATT 6
SHEET 6
NF TON 2
AF SOUND 2

x VAR ERKLÄRUNG SIEHE BL. 8
VAR EXPLANATION SEE SHEET 8

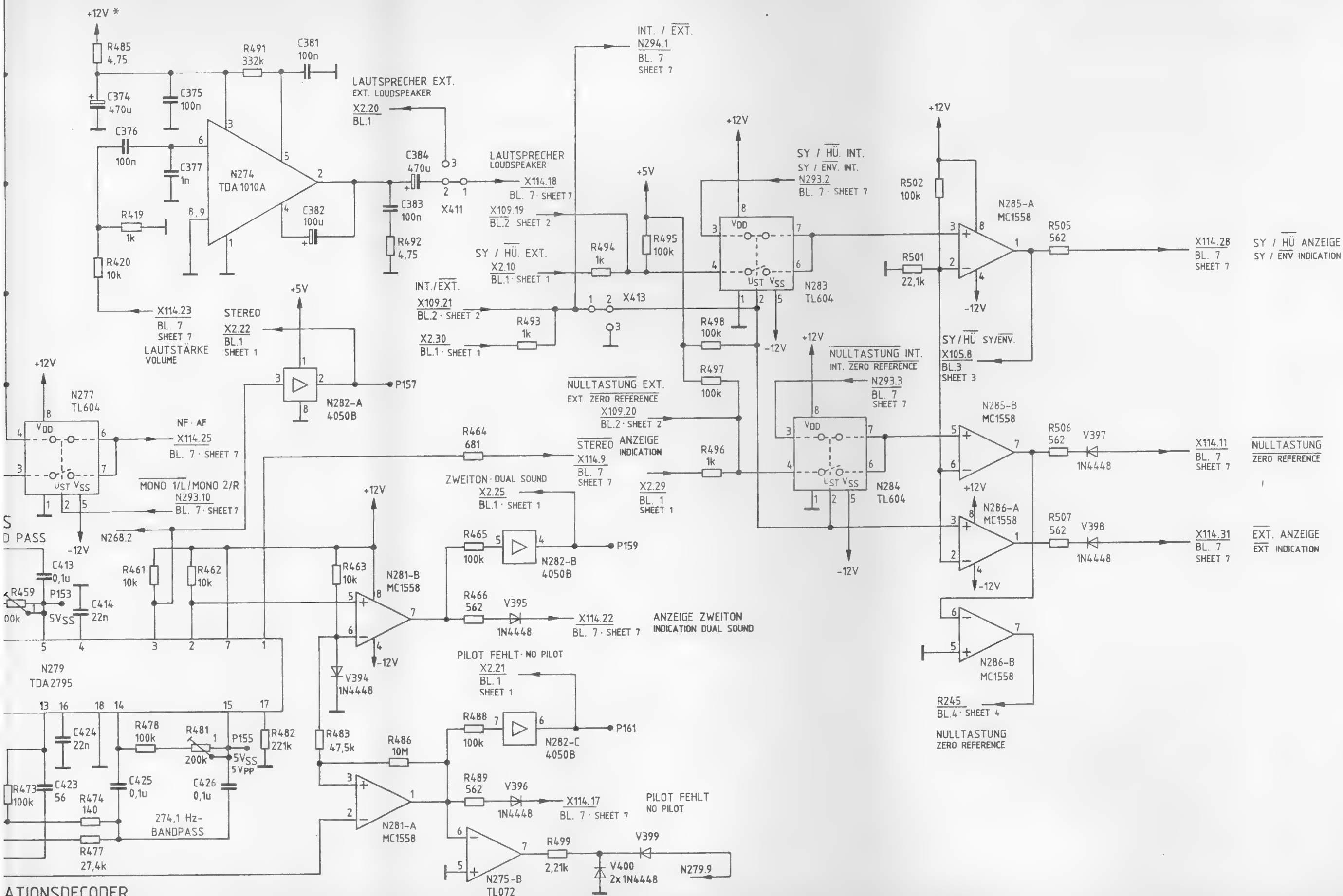
ROHDE & SCHWARZ

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										Gepr			CIRCUIT DIAGRAM OF MAIN BOARD		5
													zu Gerät	EMFT	8 Bl
And. Zust.	Änderungs	Datum	Name	And. Zust.	Änderungs	Datum	Name	Norm					reg. i. V.	821.4019 V	erste Z.



MONO 1/L
X114.13
BL. 7 SHEET 7

LAUTSPRECHERVERSTÄRKER
LOUDSPEAKER AMPLIFIER



ATIONSDECODER
ON DECODER



A	39285	9.87	PI					2KGH	Tag	Name
B	40163	3.88	PI					Bearb	6.86	RP / BA
								Gepr		
An	Änderungs Mitteilung	Datum	Name	Än	Änderungs Mitteilung	Datum	Name	Norm		

Benennung	GRUNDPLATTE CIRCUIT DIAGRAM OF MAIN BOARD
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Zeichn.-Nr.

821.8514 S

0-

Blatt-Nr
6
v 8 B!

req : V 8214019 V

erste 2

1

Zeichn.-Nr.	82-514 S	Änd.-zust.	Änd. Mittg. Nr.	Datum	Name
2 KGH		A	40163	3.88	PI
gezeichnet	9.86				
hergestellt	9.86				
geprüft					
normgepr.					


ROHDE & SCHWARZ

293-A
4066

2

1.3
6
HU. INT.
3 / SHEET 6
ENV. INT.

293-B
4066

3

BL. 6
FUNG INT.
SHEET 6
REFERENCE

X413.1 / BL. 6
INT. / EXT.

293-C
4066

9

10

1.2 / BL. 6
0 1/L / MONO 2/R

REGELSPANNUNG AUTO.
CONTROL VOLTAGE AUTO.
N113.8 / BL. 3
SHEET 3

REGELSPANNUNG
CONTROL VOLTAGE
X105.13
BL. 3
SHEET 3

N294-A
4011

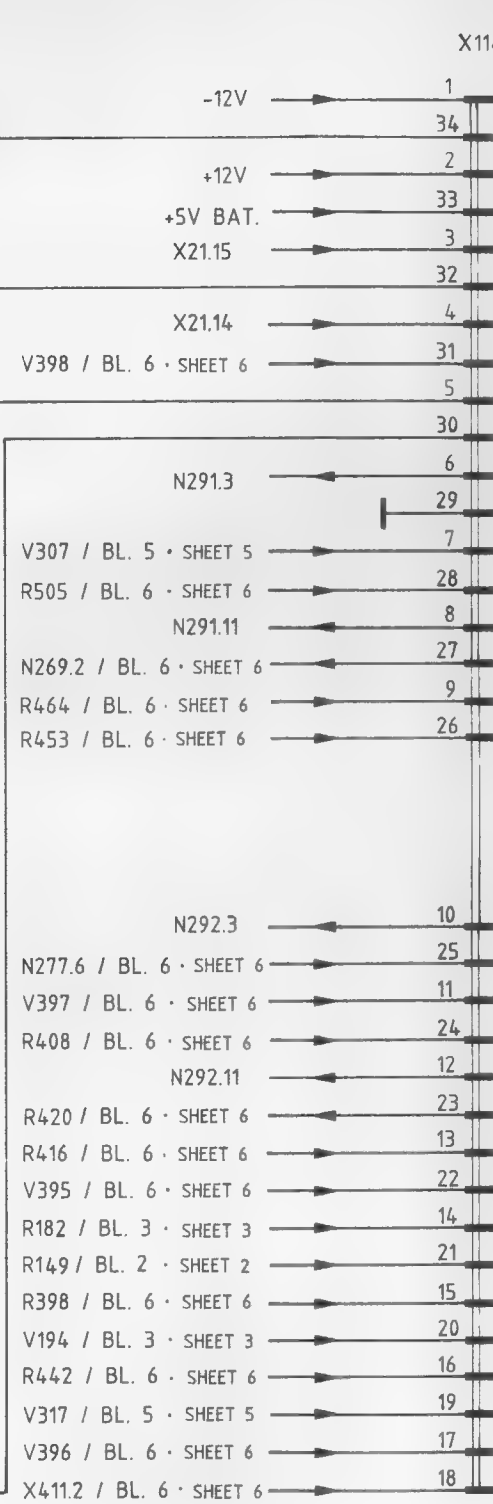
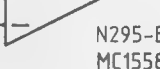
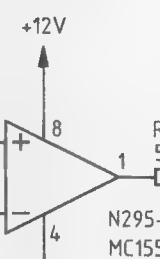
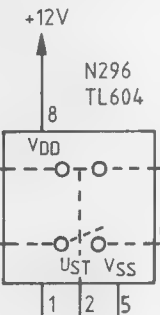
N294-B
4011

N294-D
4011

N294-C
4011

R511
10k

R512
10k



(ZUR FRONTPLATTE)
(TO FRONT PANEL)

1	-12V	1	-12V	1	-12V
34	TASTENFREIGABE	2	+12V	2	KEY ENABLE
2	+12V	3	+5V BAT.	3	+12V
33	+5V BAT.	4	SI-AUSFALL	4	+5V BAT.
3	SI-AUSFALL	5	REGELSPANNUNG HAND	5	BLOWN-FUSE INDICATION
32	REGELSPANNUNG HAND	6	EINSCHALTCONTROLLE	6	CONTROL VOLTAGE HAND
4	EINSCHALTCONTROLLE	7	EXT. ANZEIGE	7	ON INDICATION
31	EXT. ANZEIGE	8	AUTO / HAND ANZEIGE	8	EXT. INDICATION
5	AUTO / HAND ANZEIGE	9	MONO 1/L MONO 2/R	9	AUTO / HAND INDICATION
30	MONO 1/L MONO 2/R	10	SY. / HU. INT.	10	MONO 1/L MONO 2/R
6	SY. / HU. INT.	11	TONTR. 1 FEHLT	11	SY. / ENV. INT.
29	TONTR. 1 FEHLT	12	SY. / HU. ANZEIGE	12	NO SOUND CARRIER 1
7	SY. / HU. ANZEIGE	13	NULLTASTUNG INT.	13	SY. / ENV. INDICATION
28	NULLTASTUNG INT.	14	HUB TON 1 / TON 2	14	INT. ZERO REFERENCE
8	HUB TON 1 / TON 2	15	STEREO ANZEIGE	15	DEV. SOUND 1 / SOUND 2
27	STEREO ANZEIGE	16	MONO 2 / R	16	STEREO INDICATION
9	MONO 2 / R	17	AUTO / HAND	17	MONO 2 / R
26	AUTO / HAND	18	NF	18	AUTO / HAND
10	NF	19	NULLTASTUNG ANZEIGE	19	NF
25	NULLTASTUNG ANZEIGE	20	AUSGANGSPEL MONO 1/L	20	NULLTASTUNG ANZEIGE
11	AUSGANGSPEL MONO 1/L	21	MONO 1/L MONO 2/R	21	AUSGANGSPEL MONO 1/L
24	MONO 1/L MONO 2/R	22	LAUTSTÄRKE	22	MONO 1/L MONO 2/R
12	LAUTSTÄRKE	23	MONO 1/L	23	LAUTSTÄRKE
23	MONO 1/L	24	ANZEIGE ZWEITON	24	MONO 1/L
13	ANZEIGE ZWEITON	25	VVIDEO ANZEIGE	25	ANZEIGE ZWEITON
22	VVIDEO ANZEIGE	26	VIN ANZEIGE	26	VVIDEO ANZEIGE
14	VIN ANZEIGE	27	HUB TON 1 / TON 2 ANZEIGE	27	VIN ANZEIGE
21	HUB TON 1 / TON 2 ANZEIGE	28	BILDTRÄGER FEHLT	28	HUB TON 1 / TON 2 ANZEIGE
15	BILDTRÄGER FEHLT	29	AUSGANGSPEL MONO 2/R	29	BILDTRÄGER FEHLT
20	AUSGANGSPEL MONO 2/R	30	TONTR. 2 FEHLT	30	AUSGANGSPEL MONO 2/R
16	TONTR. 2 FEHLT	31	PILOT FEHLT	31	TONTR. 2 FEHLT
19	PILOT FEHLT	32	LAUTSPRECHER	32	PILOT FEHLT
17	LAUTSPRECHER	33		33	LAUTSPRECHER
18		34		34	



Stromlauf zu

GRUNDPLATTE
CIRCUIT DIAGRAM OF MAIN BOARD

Zeichn.-Nr.

821.8514 S

Blatt-Nr.

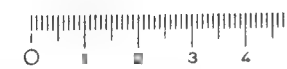
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v. 8 Bl.

EMFT

reg. i. V. 821.4019 V

erste Z.



VERKLEINERUNG

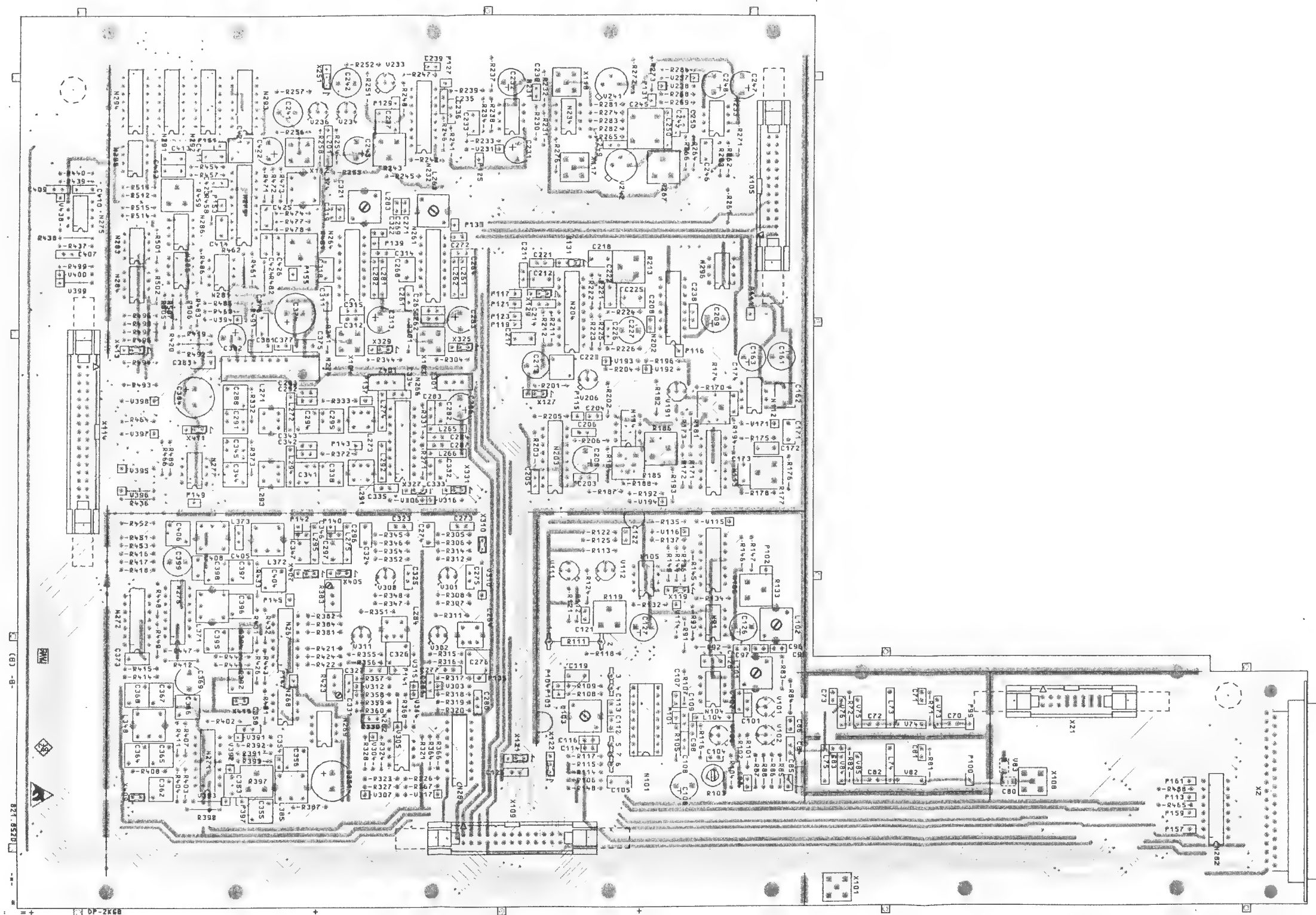
VARIANTENERKLÄRUNG/VERSION
VAR 02 - GRUNDAUSFÜHRUNG/BASIC MODEL

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



ACHTUNG EGB!
Elektrostatisch gefährdete
Bauteile erfordern eine
besondere Handhabung
ATTENTION LSD!
Electrostatic sensitive
devices require a special
handling

C 40163 04.88 PI		Maße ohne Toleranzangabe		Maßstab	
				Halbzeug, Werkstoff	
		2KGD Tag	Name	Benennung	
		Bearb 04.88	PI	GRUNDPLATTE	
		Gepr			
		Norm			
		ROHDE & SCHWARZ		Zeichn. Nr.	
		zu Gerät EMFT		821.8514.01 ED	
And Zust	Anderungs-Mitteilung	Tag	Name	Tag i. V. 821 4019V erste Z	



Ansicht und Leitungsführung Lötseite
View of tracks on solder side



ACHTUNG EGB!
Elektrostatisch gefährdete
Bauelemente erfordern eine
besondere Handhabung
ATTENTION ESD!
Electrostatic sensitive
devices require a special
handling

VERKLEINERUNG
1 2 3 4 5

VARIANTENERKLÄRUNG / VERSION
VAR 02 - GRUNDAUSFÜHRUNG / BASIC MODEL

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				2KGD Tag Name	Benennung	
				Bearb. 04.88 PI		
				Gepr.		
				Norm		
					Zeichn. Nr.	
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					reg. i. V. 821.4019V	
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3

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
.	ZUEH.STROML./CIRC.DIAGR. 821.8514 S				
C70	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C71	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C72	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C73	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C80	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521	VITRAMON	VJ1206 Y 103 K FAT	
C81	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C82	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C83	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C84	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C85	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C86	CC 1,0PF+-0,25PF,63V NPO CAPACITOR	CC 092.7207	VITRAMON	VK 24 BA	
C87	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C95	CC 33PF+-2%4X5NPO CAPACITOR	CC 087.6487	VALVO	2222 678 10339	
C96	CC 47PF+-2%4X5N150 CAPACITOR	CC 087.6670	VALVO	2222 678 34479	
C97	CC 1,5PF+-0,25PF63V NPO CAPACITOR	CC 092.7220	STETTNER	EGPZ 2.5 3X4 NPO 63V	
C98	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C101	CC 120PF+-2%6X9NPO CAPACITOR	CC 087.6558	VALVO	2222 678 10121	
C102	CC 220PF+- 5%100V NPO VIE CERAMIC CAPACITOR	CC 060.0813	UNIONCARB	C052C221J2G1CA	
C104	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C105	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%	
C106	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D	
C107	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C108	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C109	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C112	CC 3,3PF+-0,25PF3X4NPO CAPACITOR	CC 087.6364	VALVO	2222 678 09338	
C113	CC 33PF+-2%4X5NPO CAPACITOR	CC 087.6487	VALVO	2222 678 10339	
C114	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229	
C116	CC 56PF+-2%5X6N150 CAPACITOR	CC 087.6687	VALVO	2222 678 34569	
C119	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%	
C121	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C122	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C125	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C126	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D	
C127	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D	
C128	CK 10NF+-5%63V5RM MKT CAPACITOR	CK 099.2869	WIMA	FKS 2/100/0,01UF/5%	
C161	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D	
C162	CK 1UF+-10%50V5RM MKT CAPACITOR	CK 099.2998	WIMA	MKS2/50/1UF/10%	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	22	0289	ED GRUNDPLATTE	821.8514.01 SA	1+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in		
C163	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D			
C171	CK 10NF+-5%63V5RM MKT CAPACITOR	CK 099.2869	WIMA	FKS 2/100/0,01UF/5%			
C172	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%			
C173	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%			
C174	CC 100NF+-10%50V5K1200VIE CAPACITOR	CC 084.5350	UNION CARB	CK05BX104K			
C201	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D			
C203	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103			
C204	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229			
C205	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101			
C206	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101			
C208	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229			
C209	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D			
C211	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101			
C212	CK 220NF+-5%63V5RM MKT CAPACITOR	CK 099.2952	WIMA	MKS2/63/0,22UF/5%			
C213	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D			
C214	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103			
C217	CK 22NF+-5%63V5RM MKT CAPACITOR	CK 099.2881	WIMA	MKS2/63/0,022UF/5%			
C218	CK 220NF+-5%63V5RM MKT CAPACITOR	CK 099.2952	WIMA	MKS2/63/0,22UF/5%			
C221	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103			
C222	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%			
C223	CK 4,7NF+-1%63V6,3X11 KP PLASTIC-FOIL CAPACITOR	CK 283.1701	SIEMENS	B33531-A5472-F			
C225	CK 470NF+-5%63V5RM MKT CAPACITOR	CK 099.2975	WIMA	MKS2/63/0,47UF/5%			
C226	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103			
C227	CE 4,7UF-10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 022.7643	ROEDERST	ELKOEK4/63			
C230	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102			
C231	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D			
C232	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D			
C233	CK 47NF+-5%63V5RM MKT CAPACITOR	CK 099.2917	WIMA	MKS2/63/0,047UF/5%			
C235	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101			
C236	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101			
C237	CK 1NF+-1,25%63V7,5QUAD. CAPACITOR	CK 213.4353	SIEMENS	B33531-A5102-F			
C238	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101			
C239	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102			
C241	CE 2,2UF-10+50% 40V 9X13B ELECTROLYTIC CAPACITOR	CE 086.4380	ROEDERST	ELKO EKU 2/40			
C242	CE 2,2UF-10+50% 40V 9X13B ELECTROLYTIC CAPACITOR	CE 086.4380	ROEDERST	ELKO EKU 2/40			
C243	CE 10UF -10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 022.7650	ROEDERST	ELKOEK10/63			
C244	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229			
C245	CT 2,8PF-30PFMAL 0/U 4ST. AIR-TYPE TRIMMER	CT 025.7244	TRONSER	LUFTTR.1011112003000			
C246	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%			
ROHDE & SCHWARZ		Äl	Datum Date	Schaltteilliste für Parts list for		Sachnummer Stock Nr.	Blatt Page
		22	0289	ED GRUNDPLATTE		821.8514.01 SA	2+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C247	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D	
C248	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D	
C249	CC 82PF+-2%6X7NPO CAPACITOR	CC 087.6535	VALVO	2222 678 10829	
C250	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C261	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C262	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C263	CE 22UF-10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7120	ROEDERST	EK 00 CB 222 J	
C264	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C265	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C268	CK 330NF+-5%63V5RM MKT CAPACITOR	CK 099.2969	WIMA	MKS2/63/0,33UF/5%	
C269	CC 33PF+-2%4X5NPO CAPACITOR	CC 087.6487	VALVO	2222 678 10339	
C271	CC 47PF+-2%4X5N150 CAPACITOR	CC 087.6670	VALVO	2222 678 34479	
C272	CC 4,7PF+-0,25PF3X4NPO CAPACITOR	CC 087.6387	VALVO	2222 678 09478	
C273	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C274	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%	
C275	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C276	CK 1NF+-1,25%63V7,5QUAD. CAPACITOR	CK 213.4353	SIEMENS	B33531-A5102-F	
C276	NUR VAR/ONLY MOD: 20 24 CK 80PF+-1%63V6,3X11 KP PLASTIC-FOIL CAPACITOR	CK 283.1676	SIEMENS	B33531-A5681-F	
C277	NUR VAR/ONLY MOD: 22 CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C280	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C281	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C282	CK 47NF+-5%63V5RM MKT CAPACITOR	CK 099.2917	WIMA	MKS2/63/0,047UF/5%	
C283	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C284	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C286	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D	
C287	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C288	CK 330PF+-1%63V6,3X11 KP PLASTC-FOIL CAPACITOR	CK 283.1647	SIEMENS	B33531-A5331-F	
C288	NUR VAR/ONLY MOD: 20 24 CK 220PF+-1%63V6,3QUX11KP CAPACITOR	CK 340.8040	SIEMENS	B33531-A5221-F	
C292	NUR VAR/ONLY MOD: 22 CC 56PF+-2%5X6NPO CAPACITOR	CC 087.6512	VALVO	2222 678 10569	
C293	CC 56PF+-2%5X6NPO CAPACITOR	CC 087.6512	VALVO	2222 678 10569	
C294	CK 390PF+-1%63V6,3X11 KP PLASTIC-FOIL CAPACITOR	CK 283.1782	SIEMENS	B33531-A5391-F	
C294	NUR VAR/ONLY MOD: 20 24 CK 150PF+-1%63V6,3X11 KP CAPACITOR	CK 340.8070	SIEMENS	B33531-A5151-F	
C295	NUR VAR/ONLY MOD: 22 CK 100PF+-1%63V6,3QUX11KP CAPACITOR	CK 337.4654	SIEMENS	B33531-A5101-F	
C296	NUR VAR/ONLY MOD: 22 CC 470PF+-10%3X4R2000 CAPACITOR	CC 087.6993	VALVO	2222 63051 471	
C297	CK 1UF+-10%50V5RM MKT CAPACITOR	CK 099.2998	WIMA	MKS2/50/1UF/10%	

ROHDE & SCHWARZ	Äl	Datum	Schaltteilliste für	Sachnummer	Blatt
	22	0289	Parts list for ED GRUNDPLATTE	Stock Nr. 821.8514.01 SA	Page 3+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C311	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C312	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C313	CE 22UF-10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7120	ROEDERST	EK 00 CB 222 J	
C314	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C315	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	VALVO	2222 63051 472	
C318	CK 330NF+-5%63V5RM MKT CAPACITOR	CK 099.2969	WIMA	MKS2/63/0,33UF/5%	
C319	CC 33PF+-2%4X5NPO CAPACITOR	CC 087.6487	VALVO	2222 678 10339	
C321	CC 47PF+-2%4X5N150 CAPACITOR	CC 087.6670	VALVO	2222 678 34479	
C322	CC 4,7PF+-0,25PF3X4NPO CAPACITOR	CC 087.6387	VALVO	2222 678 09478	
C323	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C324	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/0,1UF/5%	
C325	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C326	CK 1NF+-1,25%63V7,5QUAD. CAPACITOR	CK 213.4353	SIEMENS	B33531-A5102-F	
C327	NUR VAR/ONLY MOD: 20 24 CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C330	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C331	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C332	CK 47NF+-5%63V5RM MKT CAPACITOR	CK 099.2917	WIMA	MKS2/63/0,047UF/5%	
C333	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C334	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C335	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C338	CK 330PF+-1%63V6,3X11 KP PLASTC-FOIL CAPACITOR	CK 283.1647	SIEMENS	B33531-A5331-F	
C342	NUR VAR/ONLY MOD: 20 24 CC 56PF+-2%5X6NPO CAPACITOR	CC 087.6512	VALVO	2222 678 10569	
C343	CC 56PF+-2%5X6NPO CAPACITOR	CC 087.6512	VALVO	2222 678 10569	
C344	CK 270PF+-1%63V6,3QUX11KP CAPACITOR	CK 340.6731	SIEMENS	B33531-A5271-F	
C346	NUR VAR/ONLY MOD: 20 24 CC 470PF+-10%3X4R2000 CAPACITOR	CC 087.6993	VALVO	2222 63051 471	
C347	CK 1UF+-10%50V5RM MKT CAPACITOR	CK 099.2998	WIMA	MKS2/50/1UF/10%	
C351	CE 47UF-10+50% 40V 13X17 ELECTROLYTIC CAPACITOR	CE 247.4991	ROEDERST	ELKOEKU47/40	
C353	CE 2,2UF+-20%35V 7X 5X11 ELECTROLYTIC CAPACITOR	CE 022.8191	ROEDERSTEI	ETR 3 2,2/40 20%	
C354	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229	
C355	CK 680PF+-1%63V6,3X11 KP PLASTIC-FOIL CAPACITOR	CK 283.1676	SIEMENS	B33531-A5681-F	
C356	CK 680PF+-1%63V6,3X11 KP PLASTIC-FOIL CAPACITOR	CK 283.1676	SIEMENS	B33531-A5681-F	
C358	CC 82PF+-2%6X7NPO CAPACITOR	CC 087.6535	VALVO	2222 678 10829	
C362	CK 7,5NF+-1,25%63V7,5QUAD CAPACITOR	CK 213.4376	SIEMENS	B33531-A5752-F	
C364	CK 8,2NF+-1%63V6,3QUX11KP CAPACITOR	CK 340.9060	SIEMENS	B33531-A5822-F	
C365	CK 470PF+-1,25%63V7,5QUAD CAPACITOR	CK 213.4347	SIEMENS	B33531-A5471-F	
C366	CK 1NF+-1,25%63V7,5QUAD. CAPACITOR	CK 213.4353	SIEMENS	B33531-A5102-F	
C367	CK 470PF+-1,25%63V7,5QUAD CAPACITOR	CK 213.4347	SIEMENS	B33531-A5471-F	

ROHDE & SCHWARZ	Äl	Datum	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	22	0289			
			ED GRUNDPLATTE	821.8514.01 SA	4+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
C368	CK 8,2NF+-1%63V6,3QUX11KP CAPACITOR	CK 340.9060	SIEMENS	B33531-A5822-F		
C369	CE 10UF -10+50% 40V 9X13B ELECTROLYTIC CAPACITOR	CE 247.6588	ROEDERST	ELKOEKU10/40		
C373	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%		
C374	CE 470UF-10+50% 16V 15X20 ELECTROLYTIC CAPACITOR	CE 087.0420	ROEDERST	ELKO EK 470/16		
C375	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%		
C376	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%		
C377	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102		
C381	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%		
C382	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D		
C383	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%		
C384	CE 470UF-10+50% 16V 15X20 ELECTROLYTIC CAPACITOR	CE 087.0420	ROEDERST	ELKO EK 470/16		
C392	CK 7,5NF+-1,25%63V7,5QUAD CAPACITOR	CK 213.4376	SIEMENS	B33531-A5752-F		
C394	CK 8,2NF+-1%63V6,3QUX11KP CAPACITOR	CK 340.9060	SIEMENS	B33531-A5822-F		
C395	CK 470PF+-1,25%63V7,5QUAD CAPACITOR	CK 213.4347	SIEMENS	B33531-A5471-F		
C396	CK 1NF+-1,25%63V7,5QUAD. CAPACITOR	CK 213.4353	SIEMENS	B33531-A5102-F		
C397	CK 470PF+-1,25%63V7,5QUAD CAPACITOR	CK 213.4347	SIEMENS	B33531-A5471-F		
C398	CK 8,2NF+-1%63V6,3QUX11KP CAPACITOR	CK 340.9060	SIEMENS	B33531-A5822-F		
C399	CE 10UF -10+50% 40V 9X13B ELECTROLYTIC CAPACITOR	CE 247.6588	ROEDERST	ELKOEKU10/40		
C404	CK 3,3NF+-1%63V6,3QUX11KP CAPACITOR	CK 340.9030	SIEMENS	B33531-A5332-F		
C405	CC 68PF+-2%6X7NPO CAPACITOR	CC 087.6529	VALVO	2222 678 10689		
C406	CK 3,3NF+-1%63V6,3QUX11KP CAPACITOR	CK 340.9030	SIEMENS	B33531-A5332-F		
C407	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C408	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%		
C409	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103		
C410	CC 100NF+-10%50V5K1200VIE CAPACITOR	CC 084.5350	UNION CARB	CK05BX104K		
C411	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%		
C412	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%		
C413	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%		
C414	CK 22NF+-5%63V5RM MKT CAPACITOR	CK 099.2881	WIMA	MKS2/63/O,022UF/5%		
C421	CK 3,3NF+-1%63V6,3QUX11KP CAPACITOR	CK 340.9030	SIEMENS	B33531-A5332-F		
C422	CE 4,7UF-10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 022.7643	ROEDERST	ELKOEK4/63		
C423	CC 56PF+-2%5X6NPO CAPACITOR	CC 087.6512	VALVO	2222 678 10569		
C424	CK 22NF+-5%63V5RM MKT CAPACITOR	CK 099.2881	WIMA	MKS2/63/O,022UF/5%		
C425	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%		
C426	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%		
L73	LD 22,0UH10%3,300HMO,114A CHOKE	LD 067.3024	DELEVAN	DROSSEL 1025-52		
L74	LD 22,0UH10%3,300HMO,114A CHOKE	LD 067.3024	DELEVAN	DROSSEL 1025-52		
L75	LD 22,0UH10%3,300HMO,114A CHOKE	LD 067.3024	DELEVAN	DROSSEL 1025-52		
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		22	0289	ED GRUNDPLATTE	821.8514.01 SA	5+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
L101	LD SPULE 210NH 6,5W FE-K COIL	816.9051	COMPONEX	E526HNA-100076	
L102	LD SPULE 210NH 6,5W FE-K COIL	816.9051	COMPONEX	E526HNA-100076	
L103	LD SPULE 210NH 6,5W FE-K COIL	816.9051	COMPONEX	E526HNA-100076	
L104	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44	
L201	LD 150 UH10%15,00HMO,061A CHOKE	LD 067.3124	DELEVAN	DROSSEL 1025-72	
L250	LD 33,0UH10%3,400HMO,130A CHOKE	LD 067.3047	DELEVAN	DROSSEL 1025-56	
L261	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20	
L262	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44	
L263	LD SPULE 210NH 6,5W FE-K COIL	816.9051	COMPONEX	E526HNA-100076	
L264	LD 0,78UH 5,5MHZ 1NF COIL	816.9097	COMPONEX	113CNS-K1272HM-81031	
L265	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20	
L266	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20	
L271	LD 0,78UH 5,5MHZ 1NF COIL	816.9097	COMPONEX	113CNS-K1272HM-81031	
L272	LD 1,20UH10%0,180HMO,620A CHOKE	LD 067.2870	DELEVAN	DROSSEL 1025-22	
L273	NUR VAR/ONLY MOD: 20 LD 0,78UH 5,5MHZ 1NF COIL	816.9097	COMPONEX	113CNS-K1272HM-81031	
L274	LD 1,20UH10%0,180HMO,620A CHOKE	LD 067.2870	DELEVAN	DROSSEL 1025-22	
L275	NUR VAR/ONLY MOD: 20 LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44	
L281	LD 1,00UH10%1,000HMO,390A CHOKE	LD 067.2863	DELEVAN	1025-20	
L282	LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44	
L283	LD SPULE 210NH 6,5W FE-K COIL	816.9051	COMPONEX	E526HNA-100076	
L284	LD 0,78UH 5,5MHZ 1NF COIL	816.9097	COMPONEX	113CNS-K1272HM-81031	
L291	LD 0,78UH 5,5MHZ 1NF COIL	816.9097	COMPONEX	113CNS-K1272HM-81031	
L292	LD 1,20UH10%0,180HMO,620A CHOKE	LD 067.2870	DELEVAN	DROSSEL 1025-22	
L293	NUR VAR/ONLY MOD: 20 LD 0,78UH 5,5MHZ 1NF COIL	816.9097	COMPONEX	113CNS-K1272HM-81031	
L294	LD 1,20UH10%0,180HMO,620A CHOKE	LD 067.2870	DELEVAN	DROSSEL 1025-22	
L295	NUR VAR/ONLY MOD: 20 LD 10 UH 10% 3R3 144 MA CHOKE	LD 026.4184	DELEVAN	DROSSEL 1025-44	
L348	LD SPULE 10 MH COIL	264.7066	TOKO	CAN 1A111 NB	
L371	LD SPULE 10 MH COIL	264.7066	TOKO	CAN 1A111 NB	
L372	LD SPULE/UEBERTR 2,6 MH BANDPASS FILTER 38KHZ	279.7550	TOKO	CLN - 2A 112 AO	
L373	LD SPULE/UEBERTR 2,6 MH BANDPASS FILTER 38KHZ	279.7550	TOKO	CLN - 2A 112 AO	
L374	LD SPULE/UEBERTR 2,6 MH BANDPASS FILTER 38KHZ	279.7550	TOKO	CLN - 2A 112 AO	
L385	LD SPULE 10 MH COIL	264.7066	TOKO	CAN 1A111 NB	
N91	BO MC1558JG 2X OPAMP OPERATIONAL AMPLIFIER	275.0816	NSC	LM1558J	
N101	BO TDA1576 DEMOD IFAMPL DEMODULATOR IF AMPLIFIER	621.3285	VALVO	TDA1576	
N104	BJ TL604CP 2X ANALOGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP	
N105	BJ TL604CP 2X ANALOGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	22	0289	ED GRUNDPLATTE	821.8514.01 SA	6+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
N106	BO TLO74IN 4XFET OPAMP OPERATIONAL AMPLIFIER	568.7528	TEXAS INST	TLO74IN	
N112	BJ TL604CP 2X ANALOGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP	
N113	BO TLO74IN 4XFET OPAMP OPERATIONAL AMPLIFIER	568.7528	TEXAS INST	TLO74IN	
N114	BO MC1558JG 2X OPAMP OPERATIONAL AMPLIFIER	275.0816	NSC	LM1558J	
N202	BL MC14528BCP 2X MONOFLOP MONOSTABLE MULTIVIBRATOR	086.7315	SSS	SCL4528BE	
N203	BL MC14528BCP 2X MONOFLOP MONOSTABLE MULTIVIBRATOR	086.7315	SSS	SCL4528BE	
N204	BO TDA2595 FS-HORIZKOMB MONOL.TV-HORIZONT.KOMBIN.	644.2979	VALVO	TDA2595	
N231	BO TLO72ACP 2XFET OPAMP OPERATIONAL AMPLIFIER	340.6054	TEXAS INST	TLO72ACP	
N232	BL MC14528BCP 2X MONOFLOP MONOSTABLE MULTIVIBRATOR	086.7315	SSS	SCL4528BE	
N233	BO LF157J BIFET OPAMP OPERATIONAL AMPLIFIER	BO 343.1530	MOTOROLA	LF157J	
N234	BO TLO72ACP 2XFET OPAMP OPERATIONAL AMPLIFIER	340.6054	TEXAS INST	TLO72ACP	
N261	BO TDA2545A DEMOD IFAMPL DEMODULATOR IF AMPLIFIER	816.9100	VALVO	TDA2545A	
N262	BO MC1558JG 2X OPAMP OPERATIONAL AMPLIFIER	275.0816	NSC	LM1558J	
N263	BL HEF4049BP 6X INVERT INVERTER	347.3350	VALVO	HEF4049BP	
N264	BO TDA2545A DEMOD IFAMPL DEMODULATOR IF AMPLIFIER	816.9100	VALVO	TDA2545A	
N266	BO TDA2555 2XFM DEMOD FM-DEMODULATOR	816.9116	VALVO	TDA2555	
N267	BO TLO74IN 4XFET OPAMP OPERATIONAL AMPLIFIER	568.7528	TEXAS INST	TLO74IN	
N268	BJ TL604CP 2X ANALOGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP	
N269	BJ TL604CP 2X ANALOGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP	
N271	BO TLO74IN 4XFET OPAMP OPERATIONAL AMPLIFIER	568.7528	TEXAS INST	TLO74IN	
N272	BO TLO74IN 4XFET OPAMP OPERATIONAL AMPLIFIER	568.7528	TEXAS INST	TLO74IN	
N274	BO TDA1010A LF 6.0W AMPL LP POWER AMPLIFIER	821.8572	VALVO	TDA1010A	
N275	BO TLO72ACP 2XFET OPAMP OPERATIONAL AMPLIFIER	340.6054	TEXAS INST	TLO72ACP	
N276	BO TLO74IN 4XFET OPAMP OPERATIONAL AMPLIFIER	568.7528	TEXAS INST	TLO74IN	
N277	BJ TL604CP 2X ANALOGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP	
N279	BO TDA2795 IDENT.DECOD IDENTIFICATION DECODER	821.8550	VALVO	TDA2795	
N281	BO MC1558JG 2X OPAMP OPERATIONAL AMPLIFIER	275.0816	NSC	LM1558J	
N282	BL HEF4050BP 6X CONVERT CONVERTER	347.3367	VALVO	HEF4050BP	
N283	BJ TL604CP 2X ANALOGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP	
N284	BJ TL604CP 2X ANALOGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP	
N285	BO MC1558JG 2X OPAMP OPERATIONAL AMPLIFIER	275.0816	NSC	LM1558J	
N286	BO MC1558JG 2X OPAMP OPERATIONAL AMPLIFIER	275.0816	NSC	LM1558J	
N291	BL HEF4013BP 2XD FLIPFL FLIP FLOP	347.3321	VALVO	HEF4013BP	
N292	BL HEF4013BP 2XD FLIPFL FLIP FLOP	347.3321	VALVO	HEF4013BP	
N293	BL CD4066BE 4XANALOGSCH ANALOG SWITCH	290.3906	RCA	CD4066BE	
N294	BL CD4011UBE 4X2IN.NANDG NAND GATE	200.8384	RCA	CD4011UBE	
N295	BO MC1558JG 2X OPAMP OPERATIONAL AMPLIFIER	275.0816	NSC	LM1558J	
N296	BJ TL604CP 2X ANALOGSCH ANALOG SWITCH	BJ 300.6199	TEXAS INST	TL604CP	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	22	0289	ED GRUNDPLATTE	821.8514.01 SA	7+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
P99	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P100	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P101	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P102	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P103	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P104	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P111	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P113	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P115	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P116	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P117	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P119	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P121	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P123	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P125	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P127	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P129	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P131	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P133	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P135	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P137	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P139	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P140	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P141	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P142	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P143	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P145	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P147	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P149	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P151	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P153	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P155	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P157	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P159	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P161	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
P397	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	BERG	NR. 75 403-001	
R71	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R72	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	

ROHDE & SCHWARZ	Äl	Datum	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	22	0289			
			ED GRUNDPLATTE	821.8514.01 SA	8+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in		
R81	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D			
R82	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D			
R83	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D			
R84	RL 0,35W 33,2 OHM+-1%TK50 RESISTOR	RL 082.9359	DRALORIC	SMA0207/33,2OHM-F-D			
R85	RL 0,35W 15,0KOHM+-1%TK50 RESISTOR	RL 083.1400	DRALORIC	SMA0207/15K-F-D			
R86	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR	RL 083.1351	DRALORIC	SMA0207/12,1K-F-D			
R87	RL 0,35W27,40 OHM+-1%TK50 RESISTOR	RL 082.9271	DRALORIC	SMA0207/27,40HM-F-D			
R88	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR	RL 082.9636	DRALORIC	SMA0207/68,10HM-F-D			
R91	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C			
R92	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C			
R93	RL 0,35W 22,1KOHM+-1%TK50 RESISTOR	RL 083.1545	DRALORIC	SMA/207/22,1K-F-C			
R101	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D			
R102	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D			
R103	RS 0,5W100 OHM+-20%KURVE1 DEPOS.-CARBON POTENTIOMET	RS 069.8081	BOURNS	3329H-1-101			
R104	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D			
R105	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/4750HM-F-D			
R106	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/100HM-F-D			
R107	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D			
R108	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C			
R109	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C			
R111	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR	RL 082.2190	DRALORIC	SMA0207/5,62K-F-C			
R112	RL 0,35W 274 OHM+-1%TK50 RESISTOR	RL 083.0178	DRALORIC	SMA0207/2740HM-F-D			
R113	RL 0,35W 392 OHM+-1%TK50 RESISTOR	RL 082.2183	DRALORIC	SMA0207/392K-F-C			
R114	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/100HM-F-D			
R115	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/100HM-F-D			
R116	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D			
R117	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D			
R118	RL 0,35W 22,1KOHM+-1%TK50 RESISTOR	RL 083.1545	DRALORIC	SMA/207/22,1K-F-C			
R119	RS 0,5W2KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7884	BOURNS	3386F-1-202			
R121	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/2210HM-F-D			
R122	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D			
R123	RK HEISL 40KOHM 20% 0,4W THERMISTOR	008.0316	SIEMENS	HEISL252/20/40K5,0			
R124	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/4750HM-F-D			
R125	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D			
R132	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D			
R133	RS 0,5W5KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7890	BOURNS	3386F-1-502			
R134	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR	RL 082.2190	DRALORIC	SMA0207/5,62K-F-C			
R135	RL 0,35W 82,5KOHM+-1%TK50 RESISTOR	RL 082.2302	DRALORIC	SMA0207/82,5K-F-C			
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für		Sachnummer	Blatt
		22	0289	ED GRUNDPLATTE			
						821.8514.01 SA	9+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R136	RL 0,35W 18,2KOHM+-1%TK50 RESISTOR	RL 083.1480	DRALORIC	SMA/207/18,2K-F-C	
R137	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMAO207/10K-F-D	
R144	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMAO207/100K-F-C	
R145	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMAO207/100K-F-C	
R146	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR	RL 083.1351	DRALORIC	SMAO207/12,1K-F-D	
R147	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMAO207/1K-F-C	
R148	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMAO207/1K-F-C	
R149	RL 0,35W 49,9KOHM+-1%TK50 RESISTOR	RL 082.6114	DRALORIC	SMA O207/49,9K-F-C	
R170	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMAO207/10K-F-D	
R171	RL 0,35W 221 KOHM+-1%TK50 RESISTOR	RL 083.2270	DRALORIC	SMAO207/221K-F-C	
R172	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMAO207/10K-F-D	
R173	RL 0,35W 332 KOHM+-1%TK50 RESISTOR	RL 083.2441	DRALORIC	SMAO207/332K-F-C	
R174	RS 0,5W100KOHM+-10%10X10X CERMET POTENTIOMETER T	RS 087.7583	BOURNS	3386F 100KOHM	
R175	RL 0,35W 221 KOHM+-1%TK50 RESISTOR	RL 083.2270	DRALORIC	SMAO207/221K-F-C	
R176	RL 0,35W 27,4KOHM+-1%TK50 RESISTOR	RL 082.2583	DRALORIC	SMA O207/27,4K-F-C	
R177	RS 0,5W10KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7903	BOURNS	3386F-1-103	
R178	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMAO207/100K-F-C	
R181	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR	RL 083.1351	DRALORIC	SMAO207/12,1K-F-D	
R182	RL 0,35W 49,9KOHM+-1%TK50 RESISTOR	RL 082.6114	DRALORIC	SMA O207/49,9K-F-C	
R184	RL 0,35W 39,2KOHM+-1%TK50 RESISTOR	RL 083.1745	DRALORIC	SMA/207/39,2K-F-C	
R185	RS 0,5W10KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7903	BOURNS	3386F-1-103	
R186	RS 0,5W5KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7890	BOURNS	3386F-1-502	
R187	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMAO207/100K-F-C	
R188	RL 0,35W 10MOHM+-1%TK50 RESISTOR	RL 620.0318	RESISTA	MK2 10MOHM 1% TK50	
R192	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMAO207/100K-F-C	
R193	RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461	DRALORIC	SMAO207/562OHM-F-D	
R194	RL 0,35W 33,2KOHM+-1%TK50 RESISTOR	RL 083.1674	DRALORIC	SMAO207/33,2K-F-C	
R196	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMAO207/100K-F-C	
R201	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMAO207/100K-F-C	
R202	RL 0,35W 33,2KOHM+-1%TK50 RESISTOR	RL 083.1674	DRALORIC	SMAO207/33,2K-F-C	
R203	RL 0,35W 475 KOHM+-1%TK50 RESISTOR	RL 083.2593	DRALORIC	SMAO207/475K-F-C	
R204	RL 0,35W 15,0KOHM+-1%TK50 RESISTOR	RL 083.1400	DRALORIC	SMAO207/15K-F-D	
R205	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMAO207/332OHM-F-D	
R206	RL 0,35W 15,0KOHM+-1%TK50 RESISTOR	RL 083.1400	DRALORIC	SMAO207/15K-F-D	
R211	RL 0,35W 1,50KOHM+-1%TK50 RESISTOR	RL 083.0732	DRALORIC	SMAO207/1,50K-F-D	
R212	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMAO207/10K-F-D	
R213	RS 0,5W50KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7910	BOURNS	3386F-1-503	
R221	RL 0,35W 121KOHM+-1%TK50 RESISTOR	RL 083.2070	DRALORIC	SMA/207/121K-F-C	
R222	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR	RL 083.1351	DRALORIC	SMAO207/12,1K-F-D	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	22	0289	ED GRUNDPLATTE	821.8514.01 SA	10+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R223	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R224	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R225	RL 0,35W 825 OHM+-1%TK50 RESISTOR	RL 082.2502	DRALORIC	SMA 0207/825OHM-F-C	
R226	RL 0,35W 681 OHM+-1%TK50 RESISTOR	RL 083.0490	DRALORIC	SMA0207/681OHM-F-D	
R230	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R231	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R232	RL 0,35W 56,2KOHM+-1%TK50 RESISTOR	RL 082.2231	DRALORIC	SMA0207/56,2K-F-C	
R233	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R234	RL 0,35W 274 KOHM+-1%TK50 RESISTOR	RL 083.2364	DRALORIC	SMA/207/274K-F-C	
R237	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R238	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R239	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R241	RL 0,35W 475 KOHM+-1%TK50 RESISTOR	RL 083.2593	DRALORIC	SMA0207/475K-F-C	
R242	RL 0,35W 681 KOHM+-1%TK50 RESISTOR	RL 083.2735	DRALORIC	SMA0207/381K-F-C	
R243	RS 0,5W1MOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 087.7602	BOURNS	3386F-1-105	
R245	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R246	RL 0,35W 68,1KOHM+-1%TK50 RESISTOR	RL 082.2602	DRALORIC	SMA 0207/68,1K-F-C	
R247	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R248	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R251	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R252	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R253	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR	RL 082.9507	DRALORIC	SMA0207/47,5OHM-F-D	
R254	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/332OHM-F-D	
R256	RL 0,35W 75,0 OHM+-1%TK50 RESISTOR	RL 082.9665	DRALORIC	SMA0207/75OHM-F-D	
R257	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R258	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R261	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R262	RL 0,35W 332 KOHM+-1%TK50 RESISTOR	RL 083.2441	DRALORIC	SMA0207/332K-F-C	
R263	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R264	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/10OHM-F-D	
R265	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/475OHM-F-D	
R266	RL 0,35W 121 OHM+-1%TK50 RESISTOR	RL 082.9859	DRALORIC	SMA0207/121OHM-F-D	
R267	RS 0,5W200 OHM+-10%10X10X CERMET POTENTIOMETER T	RS 087.7554	BOURNS	3386F-1-201	
R268	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R269	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R271	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	DRALORIC	SMA0207/10OHM-F-D	
R272	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R273	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/150OHM-F-D	
R274	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/15OHM-F-D	
ROHDE & SCHWARZ		Äl Datum	Schaltteilliste für Parts list for		Blatt
		22 0289	ED GRUNDPLATTE		Page
			Sachnummer Stock Nr.		11+
			821.8514.01 SA		

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R276	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R281	RL 0,35W 75,0 OHM+-1%TK50 RESISTOR	RL 082.9665	DRALORIC	SMA0207/750HM-F-D	
R282	RL 0,35W 75,0 OHM+-1%TK50 RESISTOR	RL 082.9665	DRALORIC	SMA0207/750HM-F-D	
R283	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/150HM-F-D	
R284	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R301	RL 0,35W 56,2 OHM+-1%TK50 RESISTOR	RL 082.9571	DRALORIC	SMA0207/56,20HM-F-D	
R304	RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461	DRALORIC	SMA0207/5620HM-F-D	
R305	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR	RL 083.0926	DRALORIC	SMA0207/2,74K-F-D	
R306	RL 0,35W 15,0KOHM+-1%TK50 RESISTOR	RL 083.1400	DRALORIC	SMA0207/15K-F-D	
R307	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/1500HM-F-D	
R308	RL 0,35W 39,2 OHM+-1%TK50 RESISTOR	RL 082.9420	DRALORIC	SMA0207/39,20HM-F-D	
R311	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R312	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/4750HM-F-D	
R314	RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMA0207/22,10HM-F-D	
R315	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/150HM-F-D	
R316	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/4750HM-F-D	
R317	RL 0,35W 681 OHM+-1%TK50 RESISTOR	RL 083.0490	DRALORIC	SMA0207/6810HM-F-D	
R318	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R319	RL 0,35W 221 KOHM+-1%TK50 RESISTOR	RL 083.2270	DRALORIC	SMA0207/221K-F-C	
R320	RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMA0207/22,10HM-F-D	
R321	RL 0,35W 47,5KOHM+-1%TK50 RESISTOR	RL 083.1800	DRALORIC	SMA/207/47,5K-F-C	
R323	RL 0,35W 4,12KOHM+-1%TK50 RESISTOR	RL 083.1051	DRALORIC	SMA0207/4,12K-F-D	
R324	RL 0,35W 10MOHM+-1%TK50 RESISTOR	RL 620.0318	RESISTA	MK2 10MOHM 1% TK50	
R326	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R327	RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461	DRALORIC	SMA0207/5620HM-F-D	
R328	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R331	RL 0,35W 619 OHM+-1%TK50 RESISTOR	RL 083.0478	DRALORIC	SMA0207/6190HM-F-D	
R332	RL 0,35W 825 OHM+-1%TK50 RESISTOR	RL 082.2502	DRALORIC	SMA 0207/8250HM-F-C	
R332	NUR VAR/ONLY MOD: 22 RL 0,35W 499 OHM+-1%TK50 RESISTOR	RL 083.0410	DRALORIC	SMA0207/4990HM-F-D	
R333	NUR VAR/ONLY MOD: 20 RL 0,35W 825 OHM+-1%TK50 RESISTOR	RL 082.2502	DRALORIC	SMA 0207/8250HM-F-C	
R333	NUR VAR/ONLY MOD: 22 RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/4750HM-F-D	
R341	NUR VAR/ONLY MOD: 20 RL 0,35W 56,2 OHM+-1%TK50 RESISTOR	RL 082.9571	DRALORIC	SMA0207/56,20HM-F-D	
R344	RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461	DRALORIC	SMA0207/5620HM-F-D	
R345	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR	RL 083.0926	DRALORIC	SMA0207/2,74K-F-D	
R346	RL 0,35W 15,0KOHM+-1%TK50 RESISTOR	RL 083.1400	DRALORIC	SMA0207/15K-F-D	
R347	RL 0,35W 150 OHM+-1%TK50 RESISTOR	RL 082.9942	DRALORIC	SMA0207/1500HM-F-D	
R348	RL 0,35W 39,2 OHM+-1%TK50 RESISTOR	RL 082.9420	DRALORIC	SMA0207/39,20HM-F-D	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	22	0289	ED GRUNDPLATTE	821.8514.01 SA	12+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
R351	TRIMMWERT RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D		
R352	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/475OHM-F-D		
R354	RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMA0207/22,10HM-F-D		
R355	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/150HM-F-D		
R356	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/475OHM-F-D		
R357	RL 0,35W 681 OHM+-1%TK50 RESISTOR	RL 083.0490	DRALORIC	SMA0207/681OHM-F-D		
R358	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R359	RL 0,35W 221 KOHM+-1%TK50 RESISTOR	RL 083.2270	DRALORIC	SMA0207/221K-F-C		
R360	RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188	DRALORIC	SMA0207/22,10HM-F-D		
R364	RL 0,35W 10MOHM+-1%TK50 RESISTOR	RL 620.0318	RESISTA	MK2 10MOHM 1% TK50		
R366	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R367	RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461	DRALORIC	SMA0207/562OHM-F-D		
R368	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R371	RL 0,35W 619 OHM+-1%TK50 RESISTOR	RL 083.0478	DRALORIC	SMA0207/619OHM-F-D		
R372	RL 0,35W 475 OHM+-1%TK50 RESISTOR	RL 083.0390	DRALORIC	SMA0207/475OHM-F-D		
R373	NUR VAR/ONLY MOD: 20 RL 0,35W 499 OHM+-1%TK50 RESISTOR	RL 083.0410	DRALORIC	SMA0207/499OHM-F-D		
R381	NUR VAR/ONLY MOD: 20 RL 0,35W 221 KOHM+-1%TK50 RESISTOR	RL 083.2270	DRALORIC	SMA0207/221K-F-C		
R382	RL 0,35W 18,2KOHM+-1%TK50 RESISTOR	RL 083.1480	DRALORIC	SMA/207/18,2K-F-C		
R383	RS 0,3W 20KOHM+-10% CERMET TRIMMING POTENTIOMETER	RS 006.9151	BECKMAN	67W 20KOHM 10%		
R384	RL 0,35W 56,2KOHM+-1%TK50 RESISTOR	RL 082.2231	DRALORIC	SMA0207/56,2K-F-C		
R387	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R391	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R392	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR	RL 083.1351	DRALORIC	SMA0207/12,1K-F-D		
R393	RL 0,35W 10MOHM+-1%TK50 RESISTOR	RL 620.0318	RESISTA	MK2 10MOHM 1% TK50		
R397	RS 0,5W10KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7903	BOURNS	3386F-1-103		
R398	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R401	RL 0,35W 49,9KOHM+-1%TK50 RESISTOR	RL 082.6114	DRALORIC	SMA 0207/49,9K-F-C		
R402	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R403	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R404	RL 0,35W 6,65KOHM+-1%TK50 RESISTOR	RL 082.2254	DRALORIC	SMA0207/6,65K-F-C		
R407	NUR VAR/ONLY MOD: 20 RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R408	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D		
R411	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R412	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R414	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R415	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR	RL 083.1351	DRALORIC	SMA0207/12,1K-F-D		
R416	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/150HM-F-D		
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für	Sachnummer	Blatt
		22	0289	Parts list for	Stock Nr.	Page
				ED GRUNDPLATTE	821.8514.01 SA	13+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R417	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/150HM-F-D	
R418	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/150HM-F-D	
R419	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R420	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R421	RL 0,35W 221 KOHM+-1%TK50 RESISTOR	RL 083.2270	DRALORIC	SMA0207/221K-F-C	
R422	RL 0,35W 18,2KOHM+-1%TK50 RESISTOR	RL 083.1480	DRALORIC	SMA/207/18,2K-F-C	
R423	RS 0,3W 20KOHM+-10% CERMET TRIMMING POTENTIOMETER	RS 006.9151	BECKMAN	67W 20KOHM 10%	
R424	RL 0,35W 56,2KOHM+-1%TK50 RESISTOR	RL 082.2231	DRALORIC	SMA0207/56,2K-F-C	
R426	RL 0,35W 6,65KOHM+-1%TK50 RESISTOR	RL 082.2254	DRALORIC	SMA0207/6,65K-F-C	
R431	NUR VAR/ONLY MOD: 20 RL 0,35W2,32KOHM+-0,1%T25 RESISTOR	RL 083.9846	DRALORIC	SMA0207	
R432	RL 0,35W 6,81KOHM+-1%TK50 RESISTOR	RL 082.2560	DRALORIC	SMA 0207/6,81K-F-C	
R433	RL 0,35W 33,2KOHM+-1%TK50 RESISTOR	RL 083.1674	DRALORIC	SMA0207/33,2K-F-C	
R436	RL 0,35W 33,2KOHM+-1%TK50 RESISTOR	RL 083.1674	DRALORIC	SMA0207/33,2K-F-C	
R437	RL 0,35W 3,92KOHM+-1%TK50 RESISTOR	RL 083.1039	RESISTA	MK2	
R438	RL 0,35W 332 KOHM+-1%TK50 RESISTOR	RL 083.2441	DRALORIC	SMA0207/332K-F-C	
R439	RL 0,35W 56,2KOHM+-1%TK50 RESISTOR	RL 082.2231	DRALORIC	SMA0207/56,2K-F-C	
R440	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D	
R442	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R443	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R444	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R447	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R448	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R449	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR	RL 083.1351	DRALORIC	SMA0207/12,1K-F-D	
R451	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/150HM-F-D	
R452	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/150HM-F-D	
R453	RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020	DRALORIC	SMA0207/150HM-F-D	
R454	RL 0,35W 68,1KOHM+-1%TK50 RESISTOR	RL 082.2602	DRALORIC	SMA 0207/68,1K-F-C	
R457	RL 0,35W 340 OHM+-1%TK50 RESISTOR	RL 083.0261	DRALORIC	SMA0207/340OHM-F-D	
R458	RL 0,35W 475 KOHM+-1%TK50 RESISTOR	RL 083.2593	DRALORIC	SMA0207/475K-F-C	
R459	RS 0,5W200KOHM+-10% 10X10X CERMET POTENTIOMETER T	RS 087.7590	BOURNS	3386F-1-204	
R461	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R462	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R463	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R464	RL 0,35W 681 OHM+-1%TK50 RESISTOR	RL 083.0490	DRALORIC	SMA0207/681OHM-F-D	
R465	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C	
R466	RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461	DRALORIC	SMA0207/562OHM-F-D	
R471	RL 0,35W 68,1KOHM+-1%TK50 RESISTOR	RL 082.2602	DRALORIC	SMA 0207/68,1K-F-C	
R472	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	22	0289	ED GRUNDPLATTE	821.8514.01 SA	14+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
R473	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R474	RL 0,35W 140 OHM+-1%TK50 RESISTOR	RL 082.9913	DRALORIC	SMA0207/140OHM-F-D		
R477	RL 0,35W 27,4KOHM+-1%TK50 RESISTOR	RL 082.2583	DRALORIC	SMA 0207/27,4K-F-C		
R478	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R481	RS 0,5W200KOHM+-10%10X10X CERMET POTENTIOMETER T	RS 087.7590	BOURNS	3386F-1-204		
R482	RL 0,35W 221 KOHM+-1%TK50 RESISTOR	RL 083.2270	DRALORIC	SMA0207/221K-F-C		
R483	RL 0,35W 47,5KOHM+-1%TK50 RESISTOR	RL 083.1800	DRALORIC	SMA/207/47,5K-F-C		
R485	RL 0,35W4,75 OHM+-1%TK50 METALFILMRESISTOR	RL 099.8021	RESISTA	MK2 4,75 OHM 1% TK50		
R486	RL 0,35W 10MOHM+-1%TK50 RESISTOR	RL 620.0318	RESISTA	MK2 10MOHM 1% TK50		
R488	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R489	RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461	DRALORIC	SMA0207/562OHM-F-D		
R491	RL 0,35W 332 KOHM+-1%TK50 RESISTOR	RL 083.2441	DRALORIC	SMA0207/332K-F-C		
R492	RL 0,35W4,75 OHM+-1%TK50 METALFILMRESISTOR	RL 099.8021	RESISTA	MK2 4,75 OHM 1% TK50		
R493	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R494	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R495	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R496	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C		
R497	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R498	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R499	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C		
R501	RL 0,35W 22,1KOHM+-1%TK50 RESISTOR	RL 083.1545	DRALORIC	SMA/207/22,1K-F-C		
R502	RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764	DRALORIC	SMA0207/100K-F-C		
R505	RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461	DRALORIC	SMA0207/562OHM-F-D		
R506	RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461	DRALORIC	SMA0207/562OHM-F-D		
R507	RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461	DRALORIC	SMA0207/562OHM-F-D		
R511	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R512	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D		
R514	RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461	DRALORIC	SMA0207/562OHM-F-D		
R515	RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461	DRALORIC	SMA0207/562OHM-F-D		
V73	AE BA483 BER.SCH.DI.UHF DIODE	AE 568.2290	VALVO	BA483		
V74	AE BA483 BER.SCH.DI.UHF DIODE	AE 568.2290	VALVO	BA483		
V75	AE BA483 BER.SCH.DI.UHF DIODE	AE 568.2290	VALVO	BA483		
V76	AE BA483 BER.SCH.DI.UHF DIODE	AE 568.2290	VALVO	BA483		
V82	AE BA483 BER.SCH.DI.UHF DIODE	AE 568.2290	VALVO	BA483		
V83	AD BAS32 75V OA20 UDI DIODE	AD 006.7288	VALVO	BAS32		
V84	AE BA483 BER.SCH.DI.UHF DIODE	AE 568.2290	VALVO	BA483		
V85	AE BA483 BER.SCH.DI.UHF DIODE	AE 568.2290	VALVO	BA483		
V101	AK 2N2369A N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A		
		Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
ROHDE & SCHWARZ		22	0289	ED GRUNDPLATTE	821.8514.01 SA	15+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
V102	AK 2N2369A N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A	
V103	AK 2N2369A N 15V 200MA TRANSISTOR	AK 010.4680	VALVO	2N2369A	
V111	AK BCY59IX N 45V 200MA TRANSISTOR	AK 010.5163	VALVO	BCY59IX	
V112	AK BCY59IX N 45V 200MA TRANSISTOR	AK 010.5163	VALVO	BCY59IX	
V113	AL BD236 P 60V 1A0 TRANSISTOR	AL 010.0361	VALVO	BD236	
V114	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V115	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V116	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V171	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V191	AK BCY79IX P 45V 200MA TRANSISTOR	AK 010.3777	VALVO	BCY79IX	
V192	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V193	AE BZX79/5V6 0.5W ZDI ZENER DIODE	AE 012.2455	VALVO	BZX79/C5V6	
V194	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V206	AK BCY59IX N 45V 200MA TRANSISTOR	AK 010.5163	VALVO	BCY59IX	
V231	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V233	AK BCY79IX P 45V 200MA TRANSISTOR	AK 010.3777	VALVO	BCY79IX	
V234	AK BCY79IX P 45V 200MA TRANSISTOR	AK 010.3777	VALVO	BCY79IX	
V236	AK BCY59IX N 45V 200MA TRANSISTOR	AK 010.5163	VALVO	BCY59IX	
V237	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V238	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V241	AK BSY56 N 80V 500MA TRANSISTOR	AK 010.5511	INTERMETAL	BSY56	
V242	AK 2N4036 P 65V 500MA TRANSISTOR	010.2164	RCA	2N4036	
V301	AK BCY79IX P 45V 200MA TRANSISTOR	AK 010.3777	VALVO	BCY79IX	
V302	AK BCY59IX N 45V 200MA TRANSISTOR	AK 010.5163	VALVO	BCY59IX	
V303	AE 5082-2800 SCHOTTKY DIODE	AE 012.9066	HEWLETT-P.	5082-2800	
V304	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V305	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V306	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V307	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V308	AK BCY79IX P 45V 200MA TRANSISTOR	AK 010.3777	VALVO	BCY79IX	
V310	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V311	AK BCY59IX N 45V 200MA TRANSISTOR	AK 010.5163	VALVO	BCY59IX	
V312	AE 5082-2800 SCHOTTKY DIODE	AE 012.9066	HEWLETT-P.	5082-2800	
V314	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V315	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V316	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V317	AD 1N4448 75V 0A15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V391	AE 5082-2800 SCHOTTKY DIODE	AE 012.9066	HEWLETT-P.	5082-2800	
V392	AE 5082-2800 SCHOTTKY DIODE	AE 012.9066	HEWLETT-P.	5082-2800	
ROHDE & SCHWARZ		Äl Datum	Schaltteilliste für Parts list for		Blatt
		22 0289	ED GRUNDPLATTE		Page
			821.8514.01 SA		16+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
V393	AE BZX55/C2V7 0,5W ZDI ZENER DIODE	AE 086.8228	AEG-TELEF.	BZX55/C2V7		
V394	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V395	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V396	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V397	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V398	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V399	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V400	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
V438	AD 1N4448 75V OA15 UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET		
X2	FM IND.STECKERLEISTE 37P 37-PIN INSERT	FM 273.4020	FCT	F37P5-K45		
X21	FP STECKERLEISTE 16POL. CONNECTOR 16POL.	FP 645.6761	ROBINSON	IDH-16PK-SR3-TG30-S		
X101	FJ EINBAUSTECKER SYST.SMC CONNECTOR	FJ 082.6895	SUHNER	82 SMC-50-0-1		
X103	FJ EINBAUSTECKER SYST.SMC CONNECTOR	FJ 082.6895	SUHNER	82 SMC-50-0-1		
X104	FJ EINBAUSTECKER SYST.SMC CONNECTOR	FJ 082.6895	SUHNER	82 SMC-50-0-1		
X105	FP STECKERLEISTE 26P.GER. CONNECTOR 26POL.	FP 620.0147	PANDUIT	050-026-133BC		
X108	FJ EINBAUSTECKER SYST.SMC CONNECTOR	FJ 082.6895	SUHNER	82 SMC-50-0-1		
X109	FP STECKERLEISTE 26P.GER. CONNECTOR 26POL.	FP 620.0147	PANDUIT	050-026-133BC		
X112	FJ EINBAUSTECKER SYST.SMC CONNECTOR	FJ 082.6895	SUHNER	82 SMC-50-0-1		
X113	FJ EINBAUWINKELST.SYS.SMC PLUG	FJ 070.0174	ROSENBERG	39S201-200D2		
X114	FP STIFTLISTE 34P.GERADE CONNECTOR 34P	FP 645.7145	PANDUIT	050-034-133BC		
X117	FJ EINBAUSTECKER SYST.SMC CONNECTOR	FJ 082.6895	SUHNER	82 SMC-50-0-1		
X118	FJ EINBAUSTECKER SYST.SMC CONNECTOR	FJ 082.6895	SUHNER	82 SMC-50-0-1		
X119	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
X121	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
X122	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
X127	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
X129	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
X131	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
X251	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
X310	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
X325	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
X327	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
X329	FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36		
ROHDE & SCHWARZ		Äl	Datum	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		22	0289	ED GRUNDPLATTE	821.8514.01 SA	17+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
X331	3-POLIG FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36	
X405	3-POLIG FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36	
X407	3-POLIG FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36	
X409	3-POLIG FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36	
X411	2-POLIG FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36	
X413	3-POLIG FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36	
X415	3-POLIG FP INDIREKT.STECKERL.36P. PIN CONNECTOR	FP 242.3600	BINDER	742-5-11-0178-00-36	
	2-POLIG				
Z301	ER 5,5MHZBANDP.KER.B:100K CERAMIC FILTER 5,5MHZ NUR VAR/ONLY MOD: 20 21 26	821.8620	MURATA	SFE 5,5 MC	
Z301	ER 6,0MHZBANDP.KER.B:160K 6,0MHZBANDP.CER.BW160KC NUR VAR/ONLY MOD: 24	241.9262	STETTNER	R&S-ZCHNG.241.9262	
Z301	ER 6,5MHZBANDP.KER.B:160K 6,5MHZBANDP.CERAM.BW160KC NUR VAR/ONLY MOD: 22 23	241.9279	STETTNER	R&S-ZCHNG.241.9279	
Z301	ER 4,5MHZBANDP.KER.B:120K 4,5 MHZ BANDPASS FILTER NUR VAR/ONLY MOD: 27	288.1839	STETTNER	KERAMISCHES FILTER	
Z401	ER 5,74MHZ-BANDP.B:100K CERAMIC FILTER 5,74MHZ NUR VAR/ONLY MOD: 20 21 26	821.8614	MURATA	SFE 5,74 MC	
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ROHDE & SCHWARZ	Äl	Datum Date	Schalteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	22	0289	ED GRUNDPLATTE	821.8514.01 SA	18-

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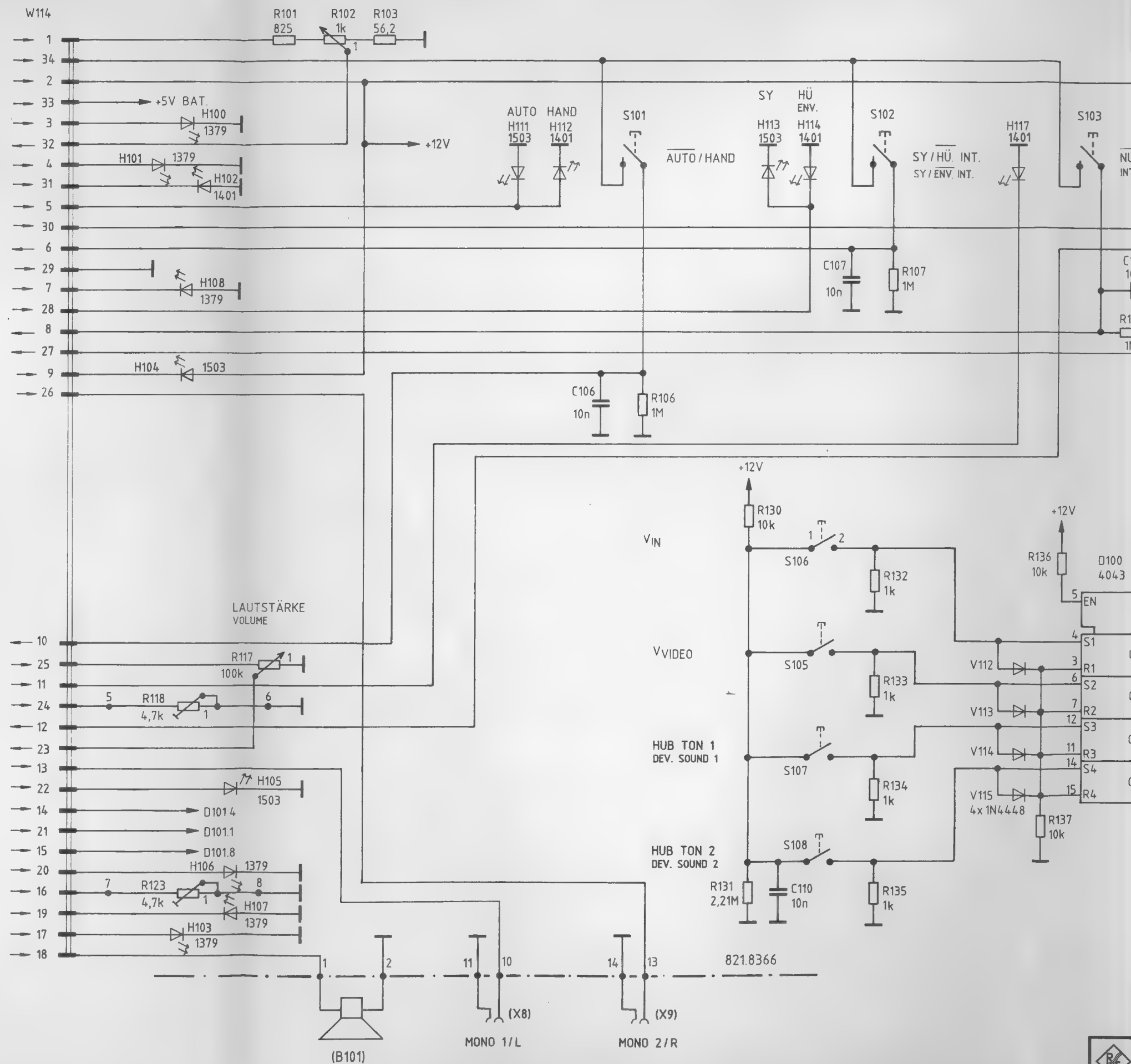


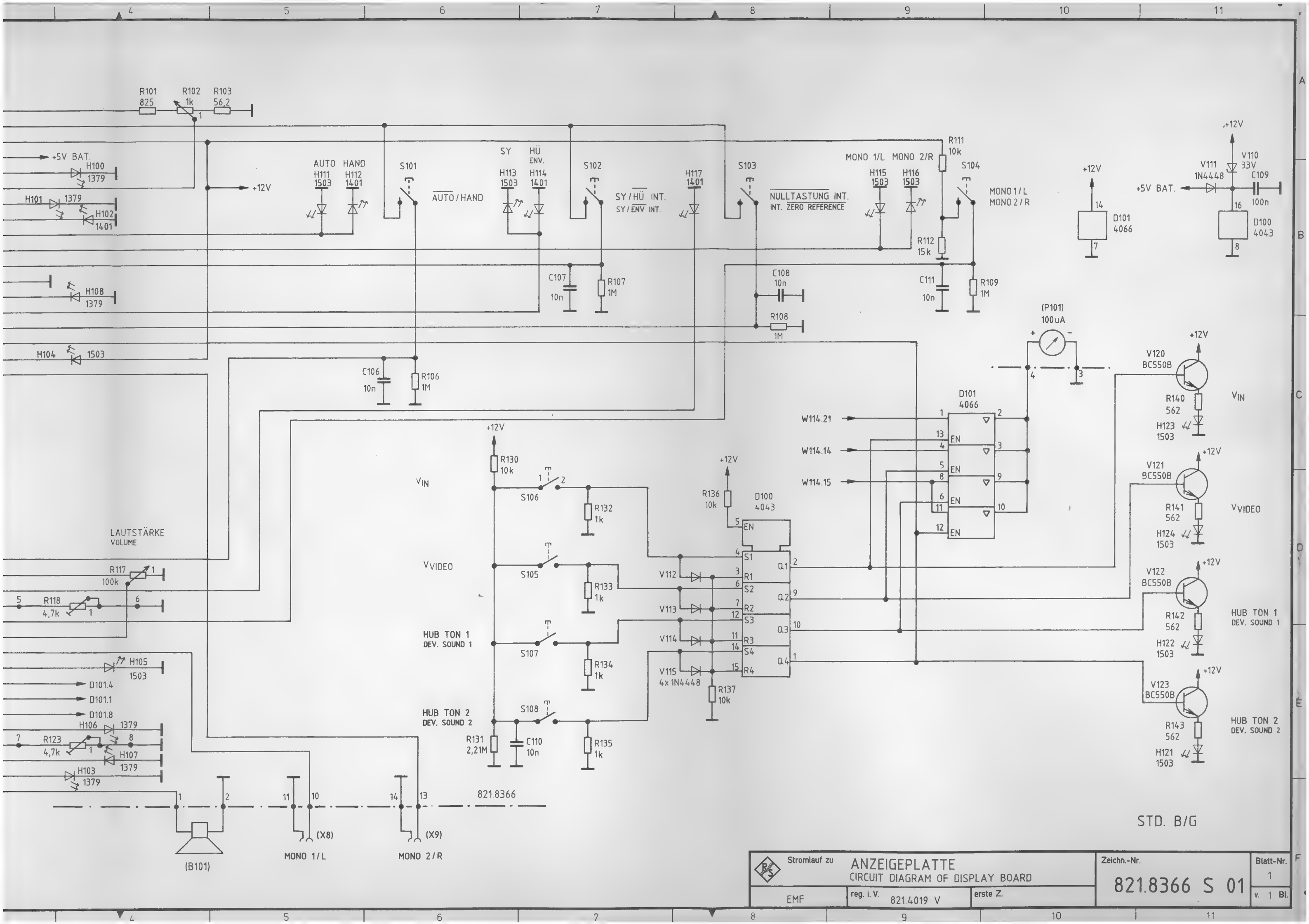
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AUTO / HAND
NF
NULLTASTUNG ANZEIGE
AUSGANGSPEGEL MONO 1/L
MONO1/L MONO2/R
LAUTSTÄRKE
MONO1/L
ANZEIGE ZWEITON
V VIDEO
V_{IN} ANZEIGE
HUB TON 1 / TON 2 ANZEIGE
BILDTRÄGER FEHLT
AUSGANGSPEGEL MONO2/R
TONTR.2 FEHLT
PILOT FEHLT
LAUTSPRECHER

-12V
 KEY ENABLE
 +12V
 +5V BAT.
 FUSE-BLOWN INDICATION
 CONTROL VOLTAGE HAND
 ON INDICATION
 EXT. INDICATION
 AUTO / HAND INDICATION
 MONO1/L MONO2/R
 SY. / ENV. INT.

 NO SOUND CARRIER 1
 SY. / ENV. INDICATION
 INT. ZERO REFERENCE
 DEV. SOUND 1 / SOUND 2
 STEREO INDICATION
 MONO2/R

AUTO / HAND
AF
ZERO REFERENCE INDICATION
OUTPUT LEVEL MONO 1/L
MONO1/L MONO2/R
VOLUME
MONO1/L
INDICATION DUAL SOUND
V VIDEO
V_{IN} INDICATION
DEV. SOUND 1 / SOUND 2 INDICATION
NO VISION CARRIER
OUTPUT LEVEL MONO2/R
NO SOUND CARRIER 2
NO PILOT
LOUDSPEAKER





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C



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07 6001 8	8	7	6	5	4	3	2	1	07 6001 8
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ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for ED ANZEIGEPLATTE	Sachnummer Stock Nr.	Blatt Page
		07	0787		821.8366.01 SA	1
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
C106	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
C107	VALVO 2222 63051 64051103 CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
C108	VALVO 2222 63051 64051103 CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
C109	VALVO 2222 63051 64051103 CC 100NF+-10%50V5K1200VIE CAPACITOR			CC 084.5350		
C110	UNION CARB CK05BX104K CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
C111	VALVO 2222 63051 64051103 CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
D100	BL CD4043BE 4XRS- LATCH LATCH			BL 303.1175		
D101	RCA CD4043BE BL CD4066BE 4XANALOGSCH ANALOG SWITCH			BL 290.3906		
	RCA CD4066BE					
H100	AF QLMP1379 LED RT RD3 LED			AF 257.4736		
H101	HEWLETT QLMP1379 AF HLMP1503 LED GN RD3 LED			AF 252.5570		
H102	GEN.INSTR. HLMP1503-1503-18/19 AF HLMP1401 LED GE RD3 LED			AF 235.4604		
H103	GEN.INSTR. HLMP1401 AF QLMP1379 LED RT RD3 LED			AF 257.4736		
H104	HEWLETT QLMP1379 AF HLMP1503 LED GN RD3 LED			AF 252.5570		
H105	GEN.INSTR. HLMP1503-1503-18/19 AF HLMP1503 LED GN RD3 LED			AF 252.5570		
H106	GEN.INSTR. HLMP1503-1503-18/19 AF QLMP1379 LED RT RD3 LED			AF 257.4736		
H107	HEWLETT QLMP1379 AF QLMP1379 LED RT RD3 LED			AF 257.4736		
H108	HEWLETT QLMP1379 AF QLMP1379 LED RT RD3 LED			AF 257.4736		
H111	HEWLETT QLMP1379 AF HLMP1503 LED GN RD3 LED			AF 252.5570		
	GEN.INSTR. HLMP1503-1503-18/19					
				821.8366.01 SA BL 1+		

Für diese Unterlage behalten wir uns alle Rechte vor

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		07	0787	ED ANZEIGEPLATTE	821.8366.01 SA	2
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.		enthalten in contained in		
H112	AF HLMP1401 LED GE RD3 LED GEN.INSTR. HLMP1401	AF 235.4604				
H113	AF HLMP1503 LED GN RD3 LED GEN.INSTR. HLMP1503-1503-18/19	AF 252.5570				
H114	AF HLMP1401 LED GE RD3 LED GEN.INSTR. HLMP1401	AF 235.4604				
H115	AF HLMP1503 LED GN RD3 LED GEN.INSTR. HLMP1503-1503-18/19	AF 252.5570				
H116	AF HLMP1503 LED GN RD3 LED GEN.INSTR. HLMP1503-1503-18/19	AF 252.5570				
H117	AF HLMP1401 LED GE RD3 LED GEN.INSTR. HLMP1401	AF 235.4604				
H121	AF HLMP1503 LED GN RD3 LED GEN.INSTR. HLMP1503-1503-18/19	AF 252.5570				
BIS/TO H124						
R101	RL 0,35W 825 OHM+-1%TK50 RESISTOR DRALORIC SMA 0207/825OHM-F-C	RL 082.2502				
R102	RS 0,5W 1,0K 10%LIN L32 DEPOS.-CARBON POTENTIOMET DRALORIC 61CDS 1KOHM10%LIN.	RS 087.8738				
R103	RL 0,35W 56,2 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/56,2OHM-F-D	RL 082.9571				
R106	RL 0,35W 1MOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1M-F-D	RL 082.7862				
BIS/TO R109						
R111	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R112	RL 0,35W 15,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/15K-F-D	RL 083.1400				
R117	RS 0,5W 100K10%LIN L32 DEPOS.-CARBON POTENTIOMET DRALORIC 61CDS 100KOHM10%LIN.	RS 087.8796				
R118	RS 1,0W 5,0KOHM KURVE1L32 DEPOS.-CARBON POTENTIOMET DRALORIC 61H/5K/LIN/W=32B=5	RS 067.0360				
R123	RS 1,0W 5,0KOHM KURVE1L32 DEPOS.-CARBON POTENTIOMET DRALORIC 61H/5K/LIN/W=32B=5	RS 067.0360				
R130	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				

821.8366.01 SA BL 2+

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for ED ANZEIGEPLATTE	Sachnummer Stock Nr.	Blatt Page
		07	0787		821.8366.01 SA	3
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.			enthalten in contained in	
R131	RL 0,35W2,21MOHM+-1%TK50 METALFILMRESISTOR	RL 099.8173				
R132	RESISTA MK2 2,21MOHM 1% TK50 RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160				
BIS/TO R135 R136	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R137	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R140	RL 0,35W 562 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/562OHM-F-D	RL 083.0461				
BIS/TO R143						
S101	SB TASTER 1XA OHNE KNOPF PUSHBUTTON SWITCH SIEMENS STB11 M.LED-LOECHERN	SB 238.3850				
BIS/TO S108						
V110	AE BZX79/C33 0,5W Z-DI ZENER DIODE	AE 012.2632				
V111	VALVO BZX79/C33 AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET	AD 012.0700				
BIS/TO V115 V120	AK BC550B NPN 50V 100MA TRANSISTOR SIEMENS BC550B GURT,POL.CBE	AK 007.2050				
BIS/TO V123						
W114	DX BANDKABEL	821.8443				
						- ENDE -

821.8366.01 SA BL 3-



ROHDE & SCHWARZ

Unternehmensbereich
Rundfunk- und Fernsehtechnik

Circuit Description

TV Test Receiver

EMF ... Power Supply

821.4519

1 Power Supply

See 822.0917 S

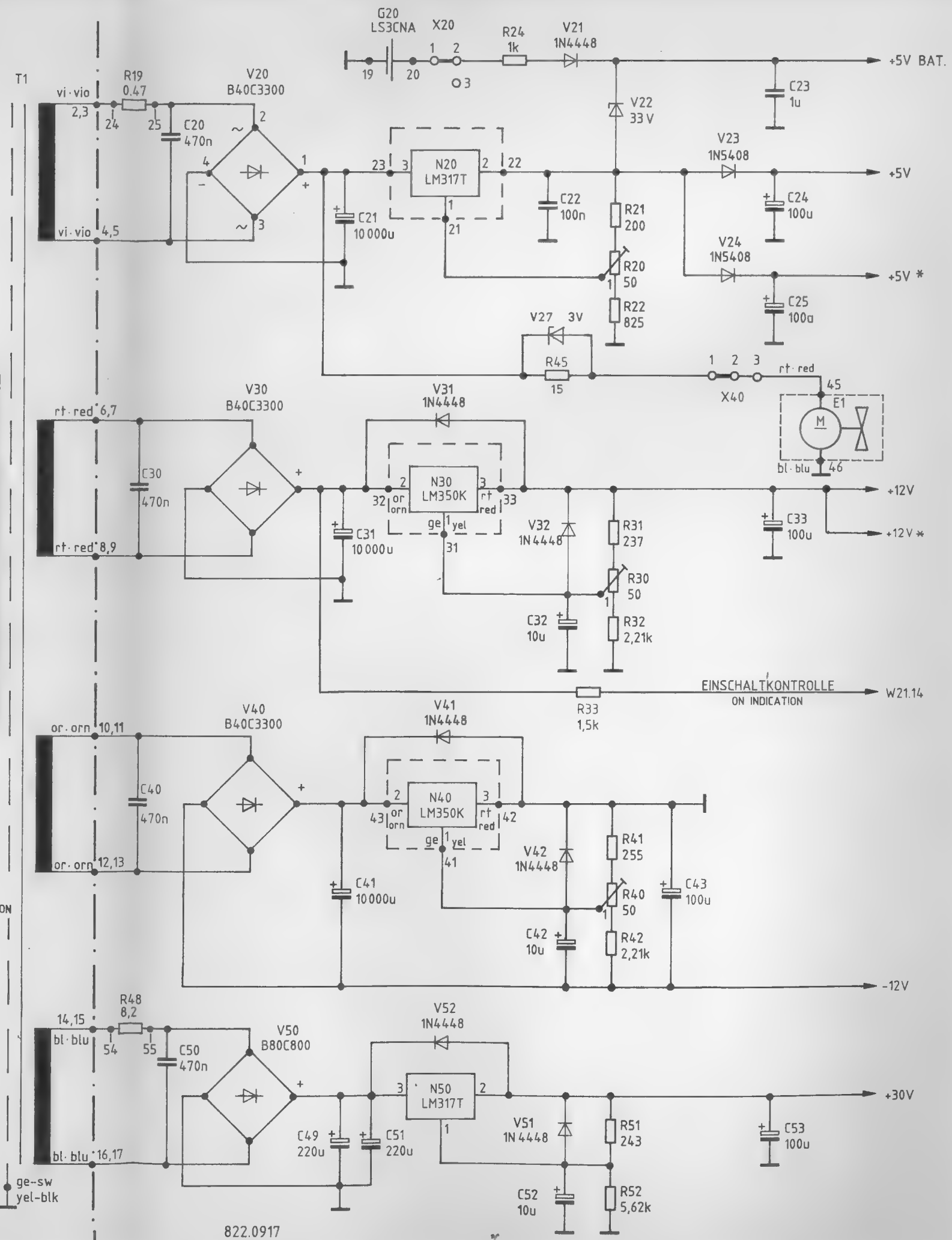
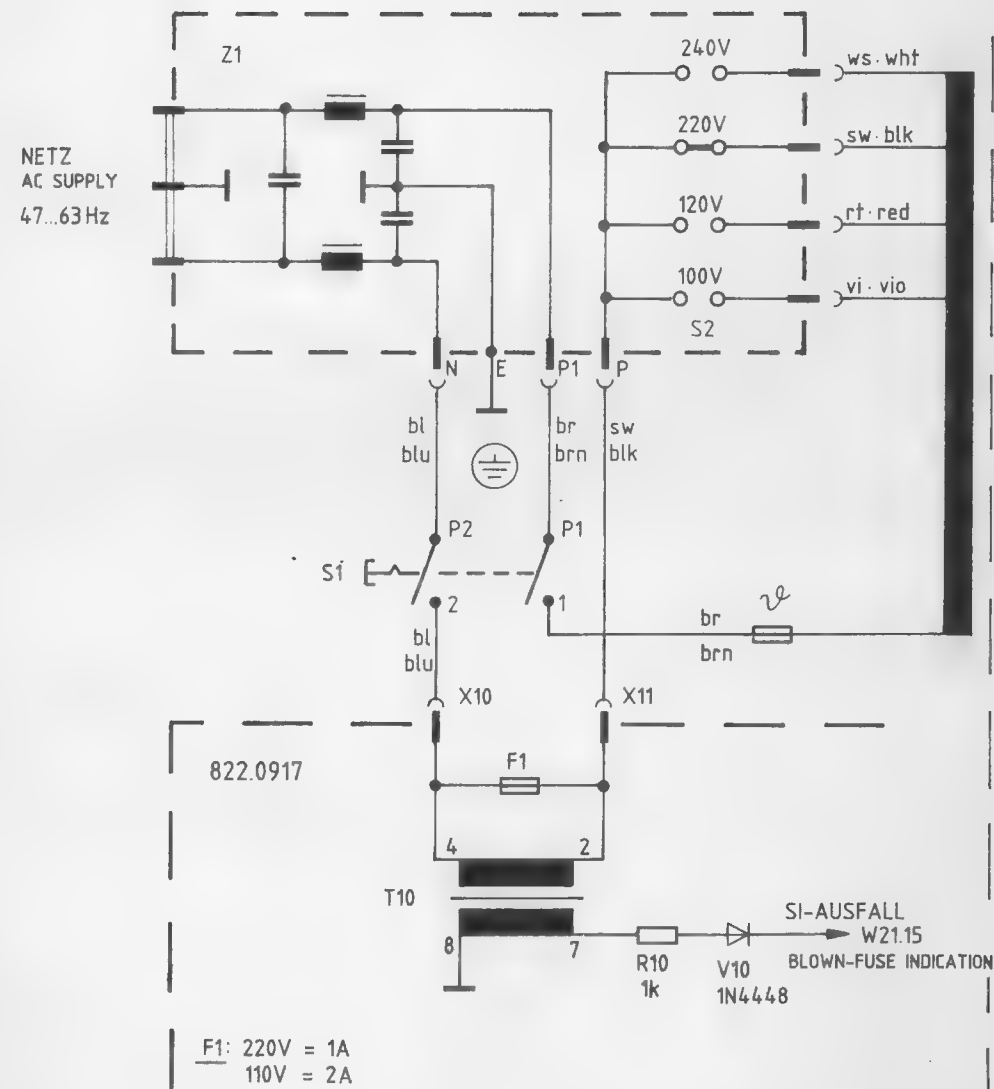
The power supply is located at the rear of the instrument as a compact assembly. It supplies regulated voltages of + 30 V, + 12 V, -12 V and + 5 V.

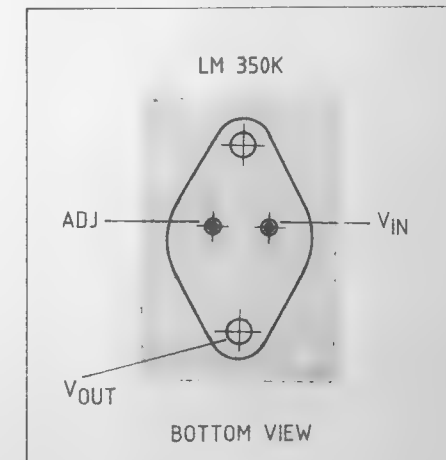
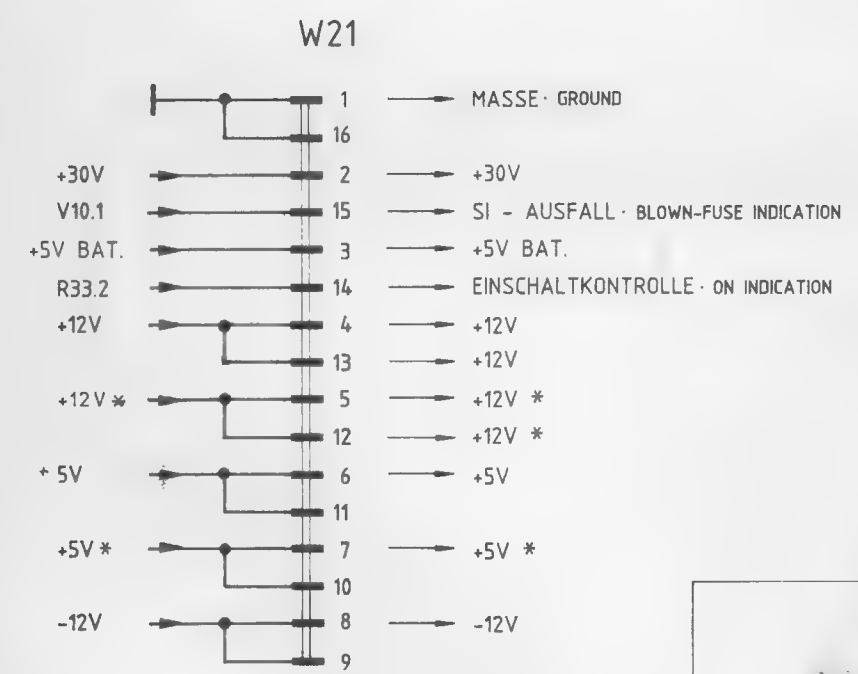
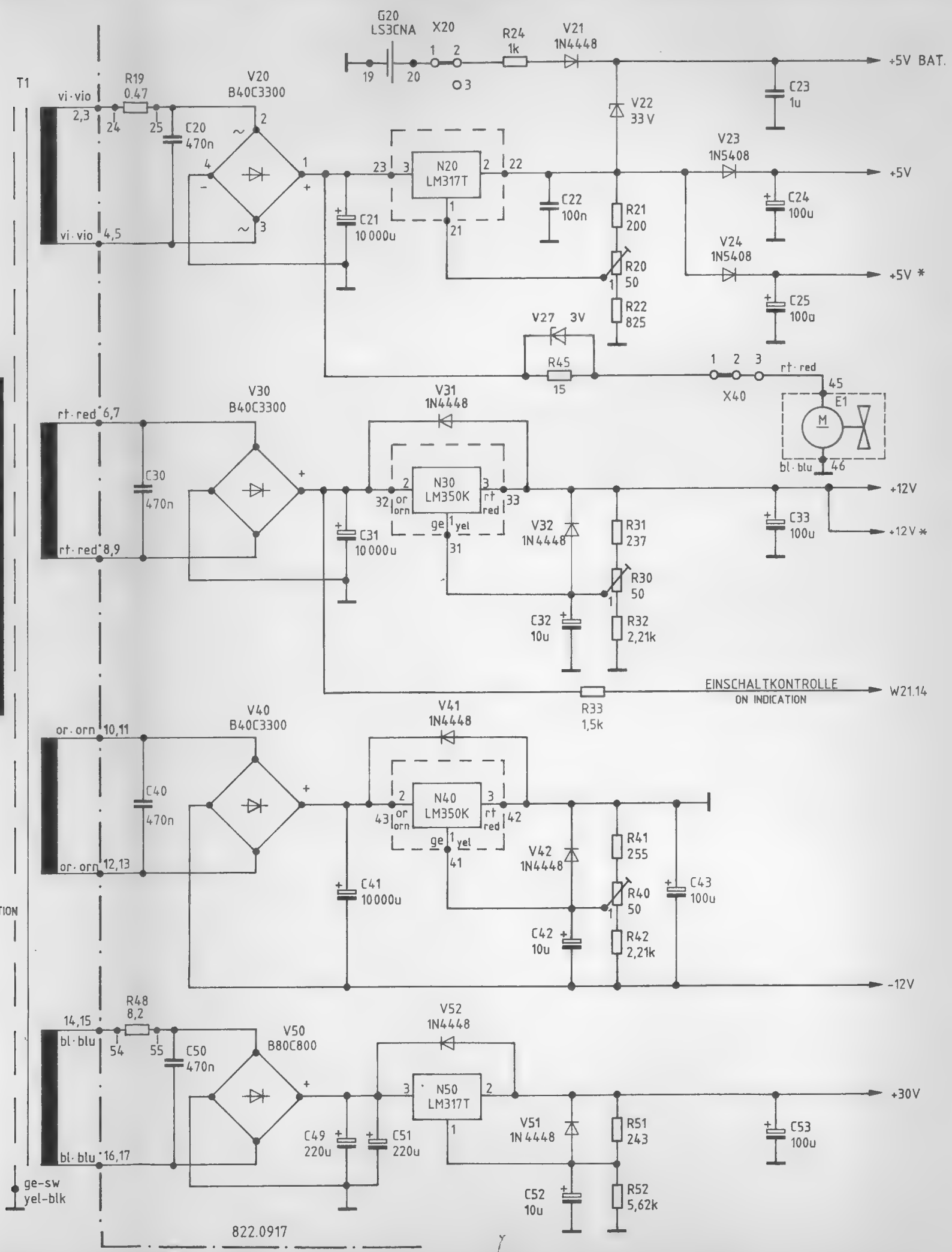
The AC supply voltage passes through an RFI suppression filter, is switched by S1 and applied to the AC transformer T1 via fuse F1, a thermal fuse and the voltage selector. The voltage selector is integrated in subassembly Z1 together with the Euro connector and the RFI suppression filter and fitted at the rear of the instrument. The AC supply is applied to transformer T10 if the fuse blows. The secondary voltage of T10 is rectified and is used for the message "Blown fuse". A generously dimensioned bridge rectifier and smoothing filter in conjunction with the integrated voltage regulators ensure that a reliable power supply is provided. All voltages apart from + 30 V are adjustable.

The lithium battery G20 is used to store a selected channel and important operating states and operates via V21/V22. The voltage regulators are fitted on a generously dimensioned heat sink. The built-in blower provides additional operational reliability.

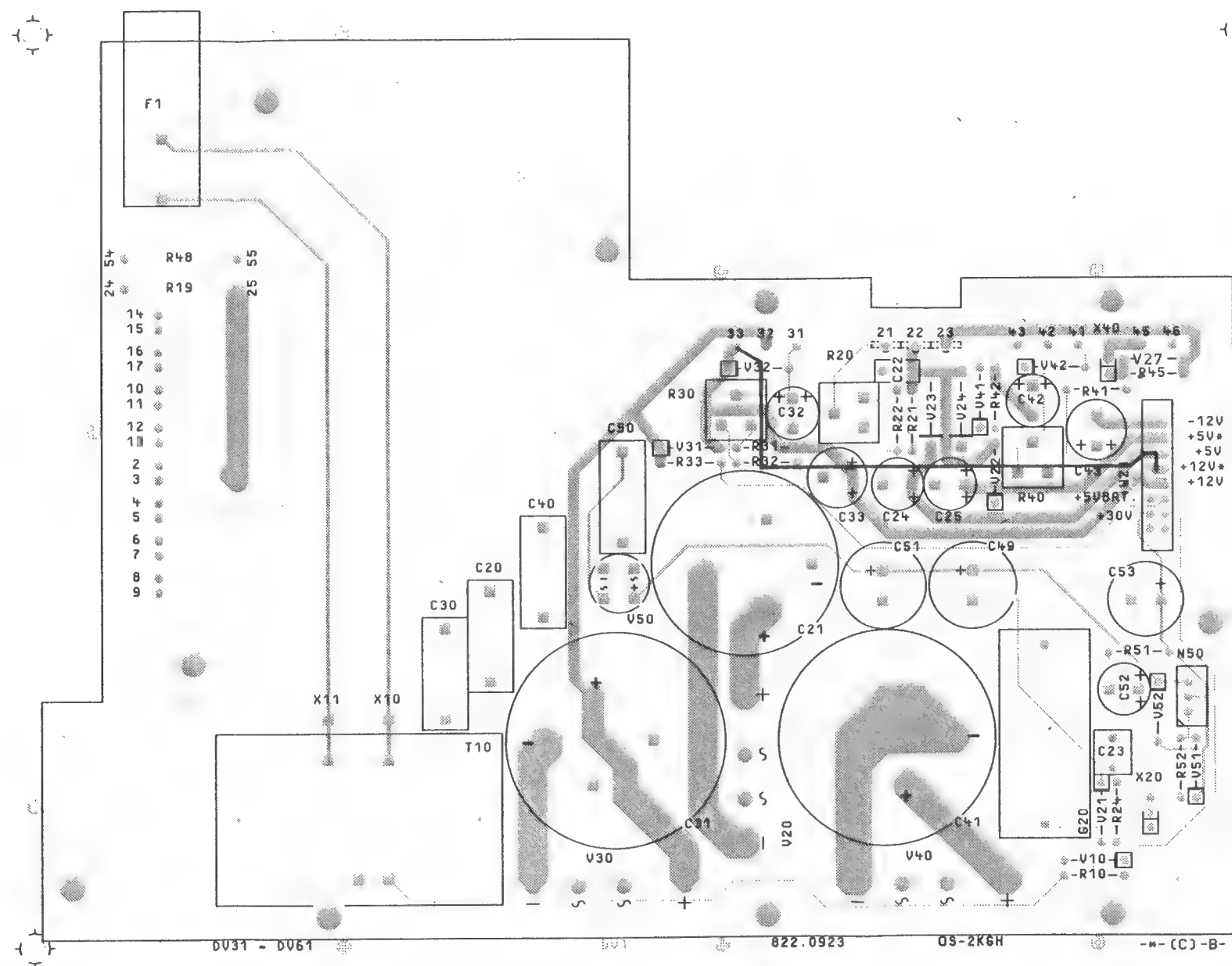


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Ansicht und Leitungsführung Lötseite
View of tracks on solder side



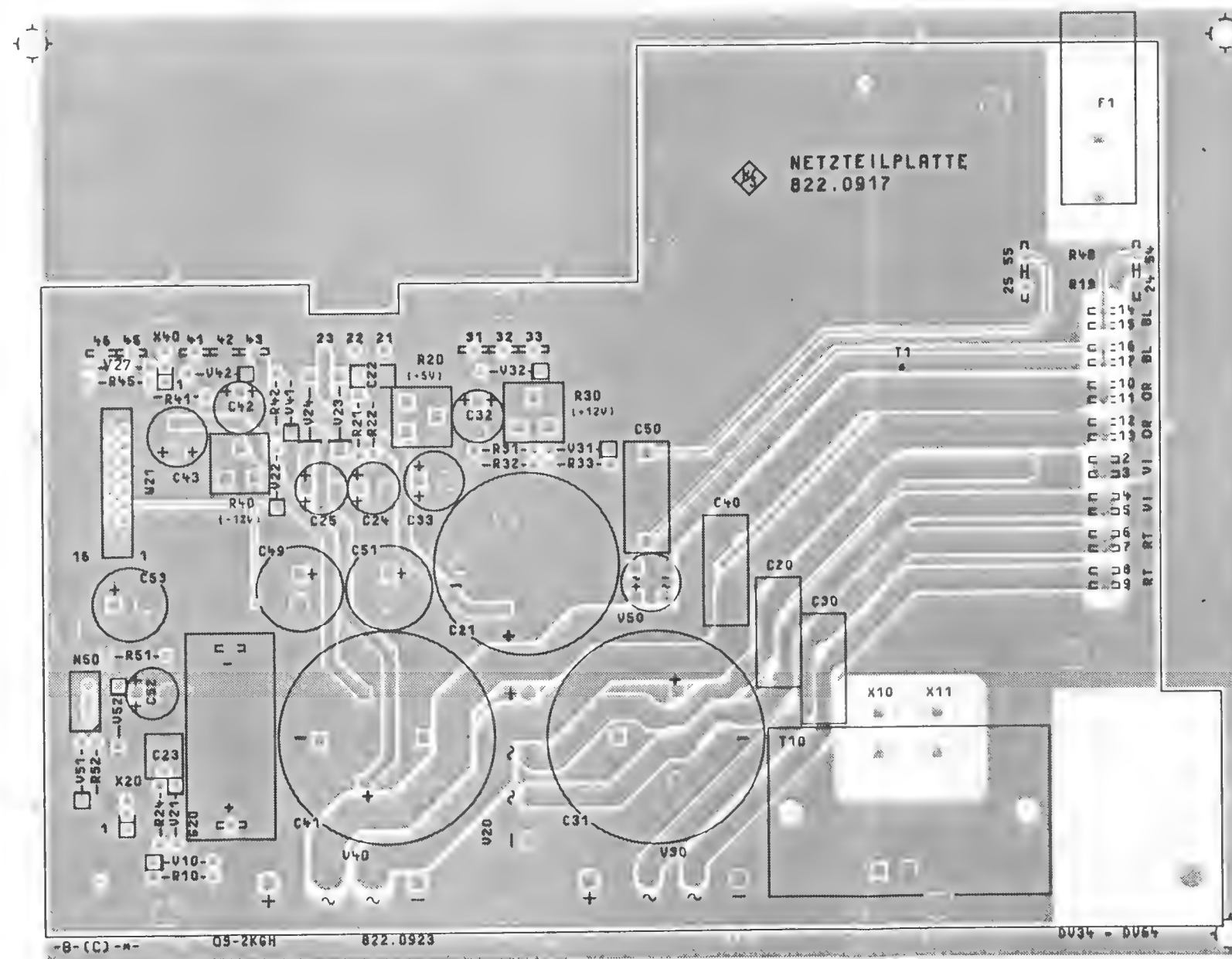
VARIANTENERKLÄRUNG/VERSION
VAR02-GRUNDAUSFÜHRUNG/BASIC MODEL

B		07.87	OS	Maße ohne Toleranzangabe		Maßstab 1 : 1		
C	40163	23.02.88	OS			Halbzeug, Werkstoff		
D	40163	05.89	OS					
				2KGH	Tag	Name	Benennung	
				Bearb	07.87	OS	NETZTEILPLATTE	
				Gepr			POWER - SUPPLY - BOARD	
				Norm				
						Zeichn.-Nr		Blatt-Nr
				ROHDE & SCHWARZ		822.0917.01		ED
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And Zust	Anderungs- Mitteilung	Tag	Name	zu Gerät EMF		reg i V. 821.4019 V		erste Z
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ACHTUNG. EGB!
Elektrostatisch gefährdete
Bauelemente erfordern eine
besondere Handhabung
ATTENTION ESD!
Electrostatic sensitive
devices require a special
handling

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



VARIANTENERKLÄRUNG / VERSION
VAR 02 - GRUNDAUSFÜHRUNG / BASIC MODEL

B C	40163	07.87 230288	OS OS	Maße ohne Toleranzangabe		Maßstab 1 : 1		
						Halbzeug, Werkstoff		
				2KGH	Tag	Name	Benennung NETZTEILPLATTE POWER - SUPPLY - BOARD	Z
				Bearb.	07.87	OS		
				Gepr				
				Norm				
And Zust	Änderungs- Mitteilung	Tag	Name	 ROHDE & SCHWARZ		Zeichn.-Nr		Blatt-Nr 2
						822.0917.01			ED
				zu Gerät EMF		reg i V 821.4019 V	erste Z	v Bl.



ACHTUNG EGB!
Elektrostatisch gefährdete
Bauelemente erfordern eine
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Einzelteile der Baugruppe
in der Baugruppe

ROHDE&SCHWARZ		AZ	Datum Date	Schalttailliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		05	0787	ZE NETZTEIL	821.4519.01 SA	1
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.			enthalten in contained in	
C20	CK 470NF+-20%100VQUADER PLASTIC-FOIL CAPACITOR ROEDERST MKT1822-447/0	CK 006.5079			822.0917.01	
C21	CE 10000UF-10+50%16V30X50 ELECTROLYTIC CAPACITOR ROEDERST EYV00BB510D	CE 219.3459			822.0917.01	
C22	CK 100NF+-5%63V5RM MKT CAPACITOR WIMA MKS/2/63/0,1UF/5%	CK 099.2930			822.0917.01	
C23	CK 1UF+-10%50V5RM MKT CAPACITOR WIMA MKS2/50/1UF/10%	CK 099.2998			822.0917.01	
C24	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR ROEDERST EK 00CB 310 D	CE 006.7165			822.0917.01	
C25	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR ROEDERST EK 00CB 310 D	CE 006.7165			822.0917.01	
C30	CK 470NF+-20%100VQUADER PLASTIC-FOIL CAPACITOR ROEDERST MKT1822-447/0	CK 006.5079			822.0917.01	
C31	CE 10000UF10+50%40V35X 80 ELECTROLYTIC CAPACITOR ROEDERST ELKOEYV10000/40ISO	CE 250.3134			822.0917.01	
C32	CE 10UF -10+50% 63V 9X13 ELECTROLYTIC CAPACITOR ROEDERST ELKOEK10/63	CE 022.7650			822.0917.01	
C33	CE 100UF-10+50% 25V 13X13 ELECTROLYTIC CAPACITOR ROEDERST ELKOEK100/25	CE 208.4007			822.0917.01	
C40	CK 470NF+-20%100VQUADER PLASTIC-FOIL CAPACITOR ROEDERST MKT1822-447/0	CK 006.5079			822.0917.01	
C41	CE 10000UF10+50%40V35X 80 ELECTROLYTIC CAPACITOR ROEDERST ELKOEYV10000/40ISO	CE 250.3134			822.0917.01	
C42	CE 10UF -10+50% 63V 9X13 ELECTROLYTIC CAPACITOR ROEDERST ELKOEK10/63	CE 022.7650			822.0917.01	
C43	CE 100UF-10+50% 25V 13X13 ELECTROLYTIC CAPACITOR ROEDERST ELKOEK100/25	CE 208.4007			822.0917.01	
C49	CE 220UF-10+50% 63V 15X30 ELECTROLYTIC CAPACITOR SIEMENS ELKO B4136-A8227-Z	CE 086.4316			822.0917.01	
C50	CK 470NF+-20%100VQUADER PLASTIC-FOIL CAPACITOR ROEDERST MKT1822-447/0	CK 006.5079			822.0917.01	
C51	CE 220UF-10+50% 63V 15X30 ELECTROLYTIC CAPACITOR SIEMENS ELKO B4136-A8227-Z	CE 086.4316			822.0917.01	
C52	CE 10UF -10+50% 63V 9X13 ELECTROLYTIC CAPACITOR ROEDERST ELKOEK10/63	CE 022.7650			822.0917.01	

821.4519.01 SA BL 1+

821.4519.01 SA BL 1+

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		05	0787	ZE NETZTEIL	821.4519.01 SA	2
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.			enthalten in contained in	
C53	CE 100UF-10+50% 63V 15X20 ELECTROLYTIC CAPACITOR SIEMENS ELKOB 41316-A8107-Z	CE 086.4300			822.0917.01	
EI	EV 80X80X38 17L/S 12V- BLOWER 12V PAPST 8112G AXIALLUEFTER	801.8160				
F1	SS SCHMELZS.T1 DIN41662 FUSE WICKMANN T1 DIN 41662 TROP FUER 220V SS T2 DIN41571 SS020.7546 FOR 100V	SS 020.7446			822.0917.01	
G20	EB 3,4V LITHIUM-BATTERIE LI BATTERY SAFT LS 3 CNA	565.1687			822.0917.01	
N20	BO LM317T +ADJ1A5 VREGL VOLTAGE REGULATOR NSC LM317T	BO 339.4080				
N30	BO LM350K +ADJ3A0 VREGL ADJUSTABLE VOLT.REGULATOR NSC LM350K	664.2045				
N40	BO LM350K +ADJ3A0 VREGL ADJUSTABLE VOLT.REGULATOR NSC LM350K	664.2045				
N50	BO LM317T +ADJ1A5 VREGL VOLTAGE REGULATOR NSC LM317T	BO 339.4080			822.0917.01	
R10	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160			822.0917.01	
R19	RD 0,8W 0,47 OHM+-3% WIRE-WOUND RESISTOR SAGE 1000S/0,47OHM/3%	RD 069.1464			822.0917.01	
R20	RS 0,5W50 OHM+-10%10X10X5 CERMET POTENTIOMETER T BOURNS 3386F-1-500	RS 247.7861			822.0917.01	
R21	RL 0,35W 200 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/200OHM-F-D	RL 083.0049			822.0917.01	
R22	RL 0,35W 825 OHM+-1%TK50 RESISTOR DRALORIC SMA 0207/825OHM-F-C	RL 082.2502			822.0917.01	
R24	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160			822.0917.01	
R30	RS 0,5W50 OHM+-10%10X10X5 CERMET POTENTIOMETER T BOURNS 3386F-1-500	RS 247.7861			822.0917.01	
R31	RL 0,35W 237 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/237OHM-F-D	RL 083.0110			822.0917.01	
821.4519.01 SA BL 2+						

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		05	0787	ZE NETZTEIL	821.4519.01 SA	3
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R32	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	822.0917.01			
R33	DRALORIC SMA 0207/2,21K-F-C RL 0,35W 1,50KOHM+-1%TK50 RESISTOR	RL 083.0732	822.0917.01			
R40	DRALORIC SMA0207/1,50K-F-D RS 0,5W50 OHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7861	822.0917.01			
R41	BOURNS 3386F-1-500 RL 0,35W 255 OHM+-1%TK50 RESISTOR	RL 083.0149	822.0917.01			
R42	DRALORIC SMA0207/255OHM-F-D RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	822.0917.01			
R44	DRALORIC SMA 0207/2,21K-F-C RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	822.0917.01			
R45	DRALORIC SMA0207/10OHM-F-D RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852	822.0917.01			
R48	DRALORIC SMA0207/10OHM-F-D RL 8,2 OHM 10% SCHUTZWID. PROTECTIVE RESISTOR	558.8215	822.0917.01			
R51	RESISTA NKS2 8,2 OHM 10% RL 0,35W 243 OHM+-1%TK50 DEPOS.-CARBON RESISTOR	RL 083.0126	822.0917.01			
R52	DRALORIC SMA0207/243OHM-F-D RL 0,35W 5,62KOHM+-1%TK50 RESISTOR	RL 082.2190	822.0917.01			
	DRALORIC SMA0207/5,62K-F-C					
S1	SB NETZSCHALTER 2XU O.KN. POWER SWITCH ITT SF OKN NE18 2 U E E	SB 007.5143				
T1	LT RINGKERNTRAFO	821.8743				
T10	LT 220V/12V 1VA GS TRANSFORMER ISMET MMG954/51	248.7794	822.0917.01			
V10	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	822.0917.01			
V20	TEXAS INST 1N4448 GEGURTET AG B40C5000/3300 BRGL RECTIFIER	AG 084.5115	822.0917.01			
V21	SIEMENS B40C5000/3300SI AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	822.0917.01			
V22	TEXAS INST 1N4448 GEGURTET AE BZX79/C33 0,5W Z-DI ZENER DIODE	AE 012.2632	822.0917.01			
V23	VALVO BZX79/C33 AG 1N5804 GL 100V 2A5 RECTIFIER UNITRODE 1N5804	AG 453.4762	822.0917.01			

821.4519.01 SA BL 3+

821.4519.01 SA BL 3+

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilleiste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		05	0787	ZE NETZTEIL	821.4519.01 SA	4
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
V24	AG 1N5804 GL 100V 2A5 RECTIFIER	AG 453.4762	822.0917.01			
V30	UNITRODE 1N5804 AG B40C5000/3300 BRGL RECTIFIER	AG 084.5115	822.0917.01			
V31	SIEMENS B40C5000/3300SI AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	822.0917.01			
V32	TEXAS INST 1N4448 GEGURTET AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	822.0917.01			
V40	TEXAS INST 1N4448 GEGURTET AG B40C5000/3300 BRGL RECTIFIER	AG 084.5115	822.0917.01			
V41	SIEMENS B40C5000/3300SI AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	822.0917.01			
V42	TEXAS INST 1N4448 GEGURTET AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	822.0917.01			
V50	TEXAS INST 1N4448 GEGURTET AG B80C800 BRGL RECTIFIER	AG 013.2042	822.0917.01			
V51	AEG-TELEF. B80C800SI AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	822.0917.01			
V52	TEXAS INST 1N4448 GEGURTET AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	822.0917.01			
	TEXAS INST 1N4448 GEGURTET					
W21	DX BANDKABEL	821.8714	822.0917.01			
X10	FV FLACHSTECKER 2,8X0,8 FLAT PLUG 2,8X0,8 VOGT 3775A/0,8/MS-S18	FV 279.1998	822.0917.01			
X11	FV FLACHSTECKER 2,8X0,8 FLAT PLUG 2,8X0,8 VOGT 3775A/0,8/MS-S18	FV 279.1998	822.0917.01			
X20	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36 1X2-POLIG	FP 242.3600	822.0917.01			
X40	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36 1X3-POLIG	FP 242.3600	822.0917.01			
Z1	FN NETZFILT.M.SPANNUNGSW. FILTER SCHAFFNER FN369-2/01	FN 099.3313				
- ENDE -						
821.4519.01 SA BL 4-						



ROHDE & SCHWARZ

Unternehmensbereich
Rundfunk- und Fernsehtechnik

Circuit Description

TV Test Receiver

EMFT IEC-Bus Interface

822.1513

LIST OF CONTENTS

1 Uses and Design

1.1	Uses	3
1.2	Design	3

2 Operation

2.1	Setting of Device Address	3
2.2	LOCAL/REMOTE Switchover	4
2.3	EMFT as Listener	5
2.4	EMFT as Talker	6
2.5	Line Messages	6
2.6	Interface Messages	7
2.7	Error Handling	7
2.8	EMFT IEC/IEEE-bus Commands	8
2.9	IEC-bus Commands According to IEEE 488.2	9
2.10	Service Request Organization According to IEEE 488.2	11
2.11	Program Example	14

3 Function Description

3.1	CPU	15
3.2	Program Memory	15
3.3	Peripherals	15
3.4	Pin Assignment of IEC-bus Connector	15
3.5	ASCII/ISO and IEC/IEEE character set	17

4 Coding Options 18

1 Uses and Design

1.1 Uses

The IEC-bus board 822.1513 is an option which enables the EMFT to be remote - controlled via a standard IEC/IEEE interface within a measuring system.

The EMFT fitted with the IEC-bus interface option can be remote - controlled via a 24-contact connector in line with the IEC 625-1 or IEEE 488 standard. The IEEE 488.2 recommendation is also implemented.

The parallel remote control connector X3 and contacts 10, .29 and .30 of the parallel remote control connector X2 must not be connected if the option is fitted.

1.2 Design

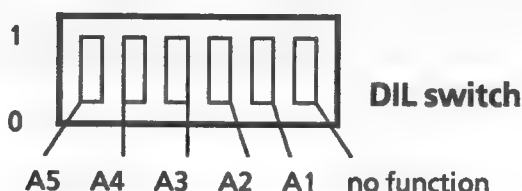
The bus board is located above the synthesizer board in the left-hand third of the instrument. The IEC-bus board is supplemented by a connection board which contains the IEC female connector and a DIL switch for setting the IEC/IEEE address.

2 Operation

Syntax applies to Process Controllers PCA2 and PCA5

2.1 Setting of Device Address

The device address can be set using the DIL switch at the rear. The address setting is transferred when the instrument is switched on.



The following program examples assume that the device address is 7.

2.2 LOCAL/REMOTE Switchover

The instrument is always in the LOCAL state (manual operation) on power-up.

There are 2 independent instrument settings:

- * LOCAL: setting via front panel with battery back-up
- * REMOTE: setting via IEC/IEEE bus without battery back-up.

The instrument setting is therefore changed when transferring from one state to another.

If the EMFT is addressed by a controller as a Listener (e.g. by IECLAD), it normally enters the REMOTE state and also remains in this state at the end of data transmission. This is indicated by the REM LED on the left of the front panel and the REMOTE LED on the right. Apart from the LOCAL key, all controls on the front panel except the keys for the meter and the sound 1/sound 2 switchover in the standard B/G version are disabled.

There are 2 ways to return to the LOCAL state:

- * By the addressed command IECGTL (GO TO LOCAL)
- * By pressing the LOCAL key. The function of the LOCAL key can be disabled by the controller by sending the universal command IECLLO (LOCAL LOCKOUT). This is indicated by the LLO LED on the front panel.

Data output from the controller to the EMFT should be stopped before pressing the LOCAL key since otherwise the EMFT assumes the REMOTE state again. If this feature (in line with the standard) is not desired, the following response can be achieved by setting jumper X145 to position 2-3 (normal setting of all jumpers on IEC-bus board: 1-2):

The instrument enters the LOCAL state by pressing the LOCAL key in the REMOTE state and can no longer be addressed via the IEC/IEEE bus. This is indicated by the REM LED flashing. Pressing the LOCAL key again results in the REMOTE state and thus in IEC/IEEE-bus addressing.

2.3 EMFT as Listener

A command consists of a header and then

- * either an extension,
example: LEVEL: LOW
- * a numerical value (possibly with dimension),
example: FREQUENCY: 210250 KHZ
- * or an extension and numerical value (possibly with dimension),
example: INPUT: RF 50 OHM

The header can be omitted with many EMFT IEC/IEEE commands or an abbreviated version of the commands may be used.

Example: DEMODULATION: SYNCHRONOUS
or: SYNCHRONOUS
or: SY

The header can be separated from the following input within a command by a colon and/or space.

Example: LEVEL: LOW
or: LEVEL LOW

Leading and trailing spaces are ignored.

Example: IECOUT7,"FREQUENCY 210.25 MHZ; LEVEL: LOW"

Numbers can be entered without a space.

Example: IECOUT7,"FREQ210.25MHZ"

Upper-case or lower-case letters are permissible.

Example: LEVEL: LOW
or: level: low

Certain commands according to IEEE 488.2 are initiated by a * character.

Examples: *OPC *ESE 32 *IDN?

A command line may comprise several individual commands separated by a semicolon (;) or a comma (,) (max. 256 characters).

Example: IECOUT7,"F210.25;SY,LEVEL:LOW"

Individual commands or a sequence of commands can be terminated with delimiters LF or CR + LF or the EOI line (automatically with the IEC command IECOUT7,"...").

2.4 EMFT as Talker

A data request command causes the EMFT to place data in the output buffer. The controller can then read the data using an IECIN command.

Example: IECOUT7,"ATTENUATION?"
IECIN7,A\$
PRINT A\$→ATT:X DB

The EMFT will return several messages (max. 255 characters) if it receives several data requests in a command line. The requests are separated by a semicolon and a space (;).

Example: IECOUT7,"*SRE?;*ESE?;*ESR?"
IECIN7,B\$
PRINT B\$→*SRE X; *ESE X; *ESR X

If data are requested again in a new command line without the output buffer having been read by IECIN..., the command is aborted.

Numerical values are output in decimal form as ASCII characters. The command "*HDR 0" should be entered if only numerical values without a header are to be output.

The Talker terminator is preset to LF with EOI and can be changed if required. It is also possible to set the controller to the terminator LF with EOI using the command "IECTERM 10".

Default setting on power-up:

Talker terminator: LF with EOI
Header with output: 1

2.5 Line Messages

IECIFC	(Interface Clear)	Line IFC
IECREN	(Remote Enable)	Line REN active
IECNREN	(Not Remote Enable)	Line REN passive
IECATN	(Attention)	Line ATN active
IECNATN	(Not Attention)	Line ATN passive
IECEOI	(End Or Identify)	Line EOI active with last data byte
IECNEOI	(Not EOI)	Line EOI passive with last data byte

2.6 Interface Messages

Interface messages (according IEC 625-1/IEEE 488 standard) are transmitted on the data lines in which case the attention line ATN is active (Low).

Universal commands:

Universal commands act on all devices connected to the bus without previous addressing.

IECDCL	(Device Clear)	Output buffer, MAV and OPC cleared, and thus SRQ also reset, if only effected by MAV or OPC
IECLLO	(Local Lockout)	LOCAL key disabled
IECUNL	(Unlisten)	Unaddressing of all Listeners
IECUNT	(Untalk)	Unaddressing of Talker
IECSPE	(Serial Poll Enable)	Setting up for Serial Poll
IECSPD	(Serial Poll Disable)	End of Serial Poll

Addressing:

IECLAD 7	(Listener Address)	Listener addressing
IECTAD 7	(Talker Address)	Talker addressing

Addressed commands:

Addressed commands are only effective if the instrument is previously addressed as a Listener (by IECLAD 7).

IECSDC	(Selected Device Clear)	As for IECDCL
IECGTL	(Go To Local)	Change to front-panel operation

2.7 Error Handling

An error detected by the EMFT during command execution is indicated by setting a bit (bit 2, 4 or 5) in the Event Status Register. These bits remain set until the Event Status Register is read or cleared by the commands "*RST" or "*CLS". This enables triggering of a Service Request and program-controlled evaluation of the type of error.

Command Error	(ESR, bit 5):	error in command entry (e.g. syntax error)
Execution Error	(ESR, bit 4):	number outside permissible range
Query Error	(ESR, bit 2):	attempt to write to output buffer without reading previous contents

Command execution is aborted if an error occurs in a command line with several commands.

EMFT CIRCUIT DESCRIPTION IEC BUS INTERFACE

In the case of a command error, execution error or query error, a plain-text error message is available in the error text buffer for the last error occurred and can be displayed on the screen via the output buffer using

IECOUT7,"*ERR?"
IECIN7,A\$ and PRINT A\$

Error message format:

Command error: COMMAND ERROR IN COMMAND #X, NEAR SIGN #Y
Execution error: EXECUTION ERROR IN COMMAND #X
Query error: QUERY ERROR IN COMMAND #X

X is the number of the command in the command line and Y the position of the faulty character (counting started with 1).

2.8 EMFT IEC/IEEE-bus Commands

Characters in brackets may be omitted or abbreviated as desired.

For standard BIG:

CH(ANNEL:)X where X = 0...99
SP(ECIAL CHANNEL:) X"
OF(SET CHANNEL:) X"

SA(W:) ON)
SA(W:) OF(F)

F(REQUENCY:)X(MHZ) where X = 7(.000...900(.000)
F(REQUENCY:)X()K(HZ) where X = 7000...900000

AT(TENUATION:)A(UTOMATIC) short form: AU(TOMATIC)
AT(TENUATION:) X(DB) where X = 0, 10, 20
AT(TENUATION)? query Attenuation

D(EMODULATION:)SY(NCHRONOUS) short form: SY(NCHRONOUS)
D(EMODULATION:) E(NVELOPE) short form: E(NVELOPE)

IN(PUT:) R(F) X(OHM) where X = 50, 75; short form: R(F)X(OHM);
IN(PUT:) I(F)

LE(VEL:) L(OW) short form: LO(W)
LE(VEL:) H(IGH) short form: HI(GH)

Z(ERO REFERENCE PULSE: ON)
Z(ERO REFERENCE PULSE:) OF(F)

For standard M:

AI(R:) X where X = 0...99
CA(TV:) X"
HA(RMONIC:) X"

T(RAP: ON)
T(RAP:) OF(F)

EMFT CIRCUIT DESCRIPTION IEC BUS INTERFACE

Default setting on power-up and addressing or with *RST:

Std. B/G:CH2	Std. M:AI2
SAW OFF	TRAP
AUTO	AUTO
SY	SY
RF50	RF50
LOW	LOW
ZERO OFF	ZERO OFF

The standard (B/G or M) is defined by means of a plug-in jumper on the synthesizer board. If a frequency is entered, it is output serially in kHz on the digital display of the instrument.

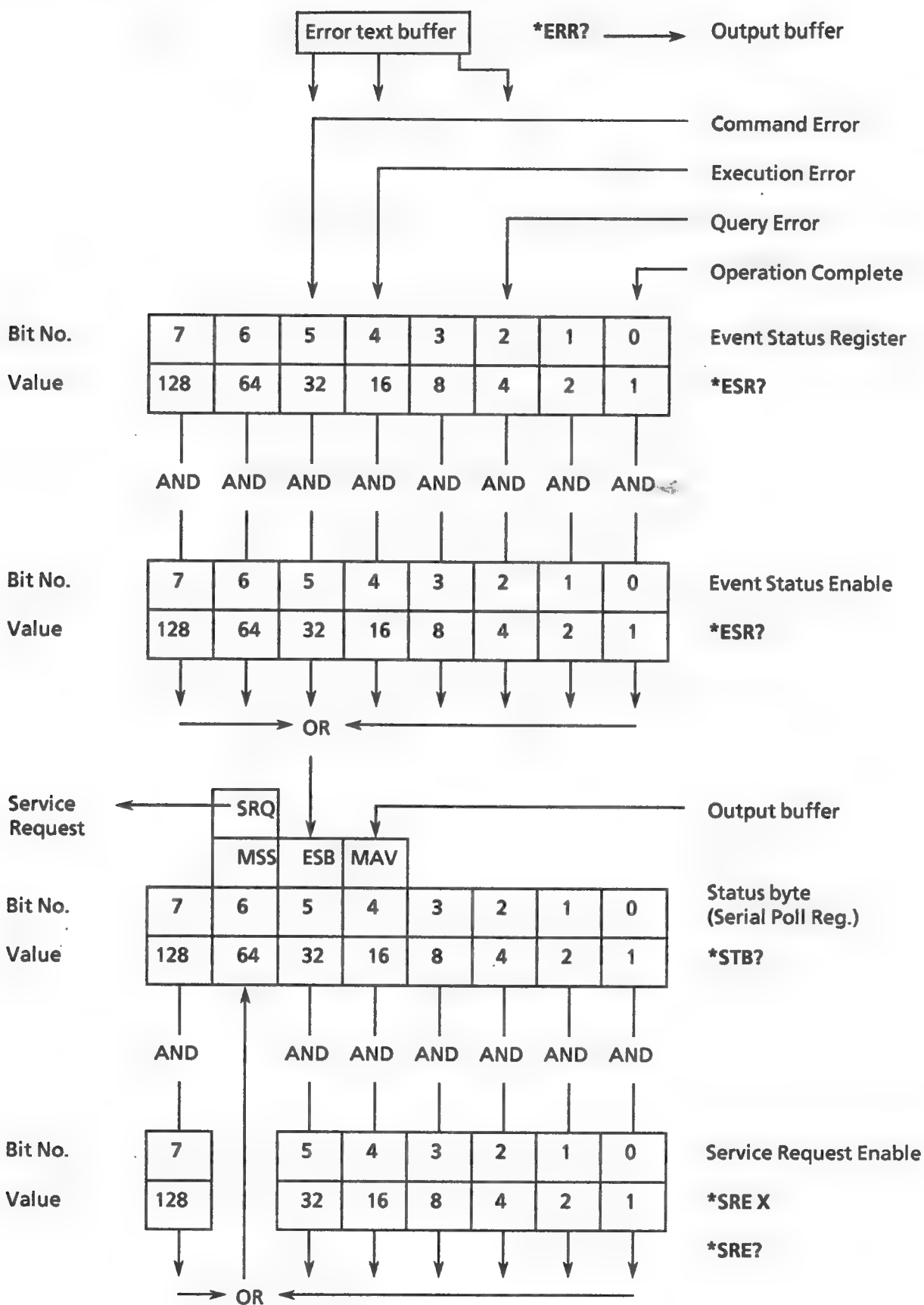
2.9 IEC-bus Commands According to IEEE 488.2

*ADR?	(Query IEC-bus address)	Setting up for output of: " *ADR 7" (example with address 7)
*ALL?	(Output of device information)	Setting up for output of: "ROHDE & SCHWARZ, EMFT, 0, V 1.1; *ADR 7; *TRM 10; * SRE 0; *ESE 0" (example)
*CLS	(Clear Status)	Status byte (Serial Poll register) = 0, Event Status Register = 0, mask registers (ESE, SRE) unchanged, output buffer, error text buffer cleared, SRQ cleared
*ERR?	(Error Query)	In event of error, setting up for output of current error message: "EXECUTION ERROR IN COMMAND #1" (example)
*ESE X	(Setting of Event Status Enable)	Where X = 0 to 255 (decimal)
*ESE?	(Event Status Enable Query)	Setting up for output of: "*ESE 32"(example with 32)
*ESR?	(Event Status Query)	Setting up for output of: "*ESR 32" (example with 32), then Event Status Register = 0
*HDR X	(Output of information with or without header)	X = 0: no header X = 1: with header (default setting)
*HDR?	(Header Query)	Setting up for output of: "*HDR 1" (example of output with header)

EMFT CIRCUIT DESCRIPTION IEC BUS INTERFACE

*IDN?	(Identification Query)	Setting up for output of: "ROHDE & SCHWARZ, EMFT, 0, V 1.1" (example with version No. 1.1)
*OPC	(Operation Complete)	Setting of bit 0 (Operation Complete) in Event Status Register
*OPC?	(Operation Complete Query)	Setting up for output of: "*OPC 1" (example with Operation Complete)
*RST	(Reset Command)	Default setting of instrument: (see IEC-bus commands EMFT, default setting) Event Status Register = 0, mask registers (ESE, SRE) unchanged, SRQ cleared if not caused by MAV, then conversion to output with header
*SRE X	(Setting of Service Request Enable)	Where X = 0 to 63, 128 to 191 (decimal)
*SRE?	(Service Request Enable Query)	Setting up for output of: "*SRE 32" (example with 32)
*STB?	(Status Byte Query)	Setting up for output of: "*STB 32" (example with 32), contents are retained, SRQ not cleared
*TRM X	(Talker terminator)	Terminators: X = 0 CR + LF with EOI X = 1 last character with EOI X > 1 X with EOI (X < 128) Default setting: X = 10 LF with EOI Example: X = 13 CR with EOI
*TST?	(Selftest)	Setting up for output of: "*TST 0"
*WAI	(Wait To Continue)	Following commands are only processed if all previous commands have been completely executed.

2.10 Service Request Organization According to IEEE 488.2



EMFT CIRCUIT DESCRIPTION IEC BUS INTERFACE

The previous diagram shows the various status registers and the links between them.

An event (Command Error, Execution Error, Query Error and Operation Complete) is written into the Event Status Register and, if permitted by the following Enable Register, transferred as an Event Sum Bit (ESB) into the status byte and thus into the Serial Poll Register which can be directly read by the controller using a Serial Poll. The message MAV indicates that information is available in the output buffer.

The mask of the Service Request Enable Register must be set accordingly if the messages are to trigger a Service Request in the status byte.

The default settings of the masks (on power-up) is 0, i.e. a Service Request is not carried out.

Setting of ESE and SRE masks:

For signalling (ESB) an event into the status register	*ESE X with X:	For transfer as Service Request	*SRE X with X:
Command Error	32	Event message	32
Execution Error	16	Message in output buffer (MAV)	16
Query Error	4		
Operation Complete	1		

If several messages are to be sent, the total value in the register is the sum of all the status bits.

Example:

Command Error and Operation Complete are to set the Event Sum Bit (ESB) in the status byte:

The ESE mask must be set to $32 + 1 = 33$. → ESE 33

ESB and MAV are to trigger an SRQ:

The SRE mask must be set to $16 + 32 = 48$. → *SRE 48

Serial Poll:

Information on the origin of the message can be obtained by querying the Serial Poll Register.

IECSPL7, V% and PRINT V%
V% = 96 → ESB
V% = 80 → MAV
V% = 112 → MAV und ESB

Note:

The Service Request bit in the status byte (Serial Poll Register) is set to zero by a Serial Poll. A renewed Serial Poll results in:

V% = 32 or V% = 16 and V% = 48.

EMFT CIRCUIT DESCRIPTION IEC BUS INTERFACE

Assuming that the MAV bit is set, a message is thus written into the output buffer which can be displayed on the controller screen using IECIN7,A\$ and Print A\$.

Note: the MAV bit is cleared when IECIN... is used for reading in.

If the ESB bit is set, the cause can be determined from the Event Status Register:

IECOUT7,"*ESR?"

IECIN7,A\$ und PRINT A\$

*ESR = 1 → Operation Complete

*ESR = 32 → Command Error

*ESR = 33 → Command Error and Operation Complete

Note: the contents of the Event Status Register are set to zero following this query and an unread SRQ in the status byte (Serial Poll Register) which was only set by the ESB bit is cleared.

In the case of a Command Error, Execution Error or Query Error, the plain-text error message in the error text buffer can be displayed on the screen via the output buffer by using

IECOUT7,"*ERR?"

IECIN7,C\$ and PRINT C\$

Note: if the output buffer is already filled by a message, a Query Error is triggered by *ERR?.
(Exception: MAV is triggered by a previous command in the same command line -> error message is appended to the output buffer message).

2.11 Program Example

IEC-bus control of EMFT:

Simplified command entry, display of requested information and error message

100 IECTERM10	Controller: Talker terminator identification: LF with EOI
110 IECOUT7,"*RST; *CLS; *ESE 52; *SRE 48"	Reset, clear status, event transfer on error, SRQ on event and MAV
120 REM MAIN PROGRAM	
130 INPUT "IEC EMFT> ";A\$	IEC command input
140 IECOUT7,A\$	
150 IECOUT7," "	Dummy command to delay SRQ
160 ON SRQ1 GOSUB 200	SRQ
170 ON SRQ1 RETURN	Stop SRQ
180 GOTO 130	
190 REM SERVICE REQUEST ROUTINE	
200 IECSP7,V%	Serial Poll
210 IF (V% AND 16) > 0 THEN GOSUB 270	MAV
220 IF (V% AND 32) > 0 THEN GOSUB 260	Error
230 IECOUT7,"*CLS"	Clear status
240 RETURN	
250 REM SUB PROGRAM	
260 IECOUT7,"*ERR?"	
270 IECIN7,A\$	
280 PRINT " ";A\$	Message or error message
290 RETURN	

3 Function Description

3.1 CPU

The main part of the circuit is the CPU (D100) - an 80186 16-bit processor.

The CPU calls the memory and peripheral ICs via the system bus. The data and address bus operates in multiplex mode and is therefore divided as follows:

- * Data transfer between ICs
- * Intermediate storage in the two latch ICs D110, 115

3.2 Program Memory

EPROMs D125 (Low byte) and D130 (High byte) contain the main program which is continuously processed by the CPU. The main program is interrupted either

- * via the LOCAL command from the device interface X116.24 (INT 0)
- * or by the IEC-bus component D155 (INT 1).

The CPU then processes a subroutine.

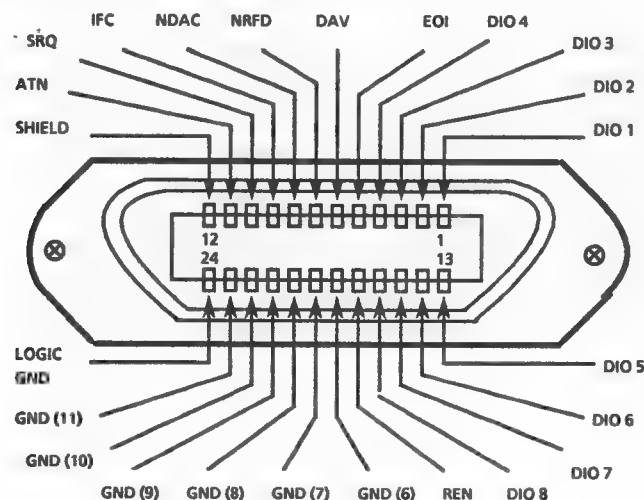
3.3 Peripherals

The connection to the device interface X116 is made by the two I/O port drivers D145, D150. The LEDs for LOCAL/REMOTE indication and LLO (Local Lockout in REMOTE) are triggered via driver D170.

The IEC-bus component D155 (Talker/Listener) establishes the connection to the IEC connector by means of drivers D160, D165 (transceiver).

The IEC-bus address determines the device to be addressed within a system and is set on the DIL switch below the IEC-bus connector.

3.4 Pin Assignment of IEC-bus Connector



EMFT CIRCUIT DESCRIPTION IEC BUS INTERFACE

The standardized interface contains three groups of bus lines:

1. Data bus with 8 lines DIO 1 to DIO 8

Data transmission is bit-parallel and byte-serial with the characters in ISO 7-bit code (ASCII code).

DIO 1 represents the least significant bit and DIO 8 the most significant bit.

2. Control bus with 5 lines

This is used to transmit control functions:

ATN (Attention) becomes active Low when addresses, universal commands or addressed commands are sent to connected devices.

REN (Remote Enable) enables the device to be switched to the remote status.

SRQ (Service Request) enables a connected device to send a Service Request to the controller by activating this line.

IFC (Interface Clear) is activated by the controller in order to set the IEC/IEEE interfaces of the connected devices to a defined status.

EOI (End or Identify) can be used to identify the end of data transfer and is used with a parallel poll.

3. Handshake bus with 3 lines

Used to control the data transfer timing.

NRFD (Not Ready For Data), an active Low on this line signals to the talker/controller that one of the connected devices is not ready to accept data.

DAV (Data Valid), is activated by the talker/controller shortly after a new data byte has been applied to the data bus.

NDAC (Not Data Accepted), is held at active Low by the connected device until it has accepted the data present on the data bus.

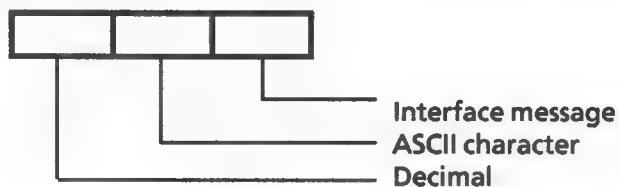
Detailed information on the data transfer timing is available in the IEC 625-1 standard. According to this standard, devices controlled via the IEC bus can be equipped with various interface functions. The following table lists the interface functions applicable to the EMFT:

Control character	Interface function
SH1	Source Handshake function, complete capability
AH1	Acceptor Handshake function, complete capability
L4	Listener function, complete capability, unaddress if MTA
T6	Talker function, complete capability, capability to reply to serial poll, unaddress if MLA
SR1	Service Request function, complete capability
PP0	Parallel Poll function, no capability
DT0	Device Trigger function, no capability
RL1	Remote/Local switchover function, complete capability
DC1	Device Clear function, complete capability

3.5 ASCII/ISO and IEC/IEEE character set

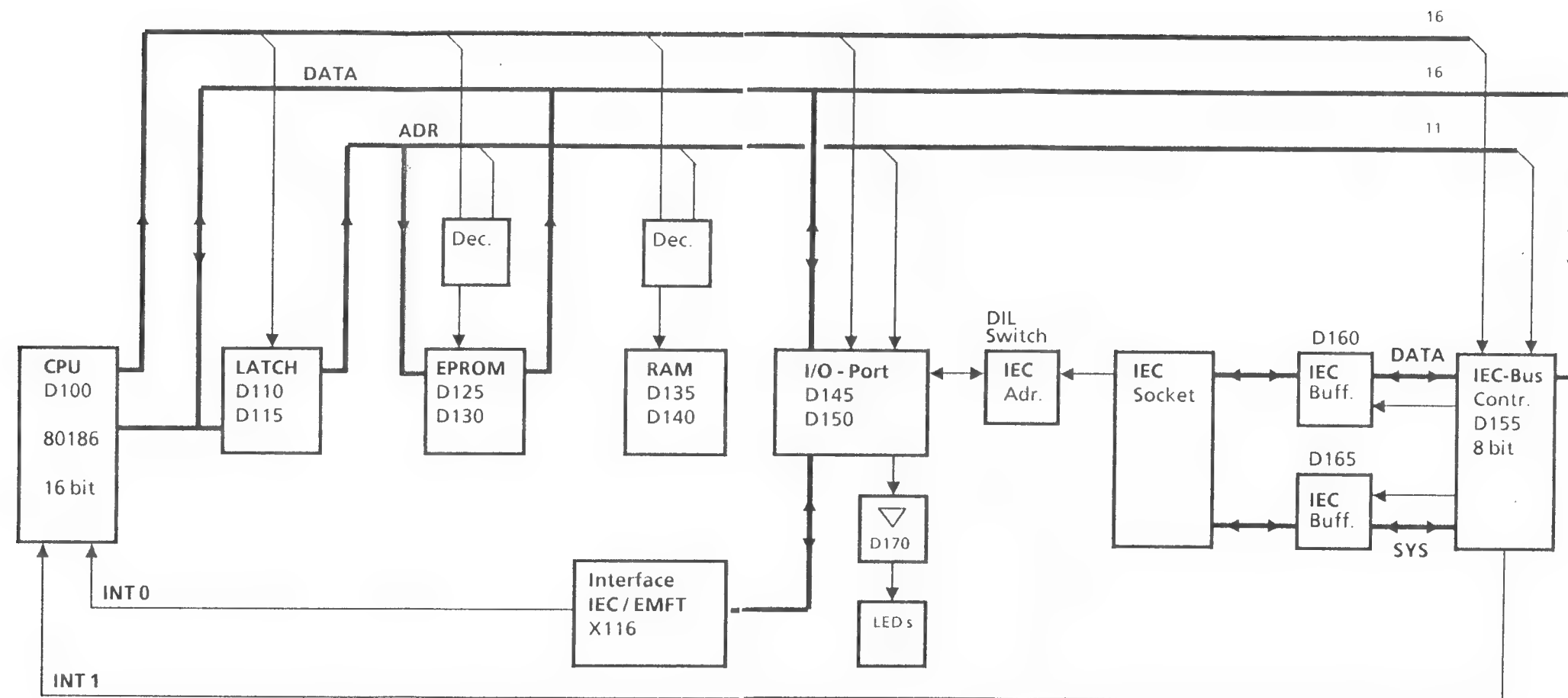
Control characters						Numbers and special characters				Upper-case letters				Lower-case letters			
0	NUL		16	DLE		32	SP	48	0	64	@	80	P	96		112	p
1	SOH	GTL	17	DC1	LLO	33	!	49	1	65	A	81	Q	97	a	113	q
2	STX		18	DC2		34	"	50	2	66	B	82	R	98	b	114	r
3	ETX		19	DC3		35	#	51	3	67	C	83	S	99	c	115	s
4	EOT	SDC	20	DC4	DCL	36	\$	52	4	68	D	84	T	100	d	116	t
5	ENQ	PPC	21	NAK	PPU	37	%	53	5	69	E	85	U	101	e	117	u
6	ACK		22	SYN		38	&	54	6	70	F	86	V	102	f	118	v
7	BEL		23	ETB		39	'	55	7	71	G	87	W	103	g	119	w
8	BS	GET	24	CAN	SPE	40	(	56	8	72	H	88	X	104	h	120	x
9	HT	TCT	25	EM	SPD	41	)	57	9	73	I	89	Y	105	i	121	y
10	LF		26	SUB		42	*	58	:	74	J	90	Z	106	j	122	z
11	VT		27	ESC		43	+	59	;	75	K	91	[	107	k	123	{
12	FF		28	FS		44	,	60	<	76	L	92	\	108	l	124	|
13	CR		29	GS		45	-	61	=	77	M	93	]	109	m	125	}
14	SO		30	RS		46	.	62	>	78	N	94	^	110	n	126	~
15	SI		31	US		47	/	63	? / UNL	79	O	95	-	111	o	127	DEL
Addressed commands			Universal commands			Listener addresses				Talker addresses				Secondary addresses and commands			

Code:



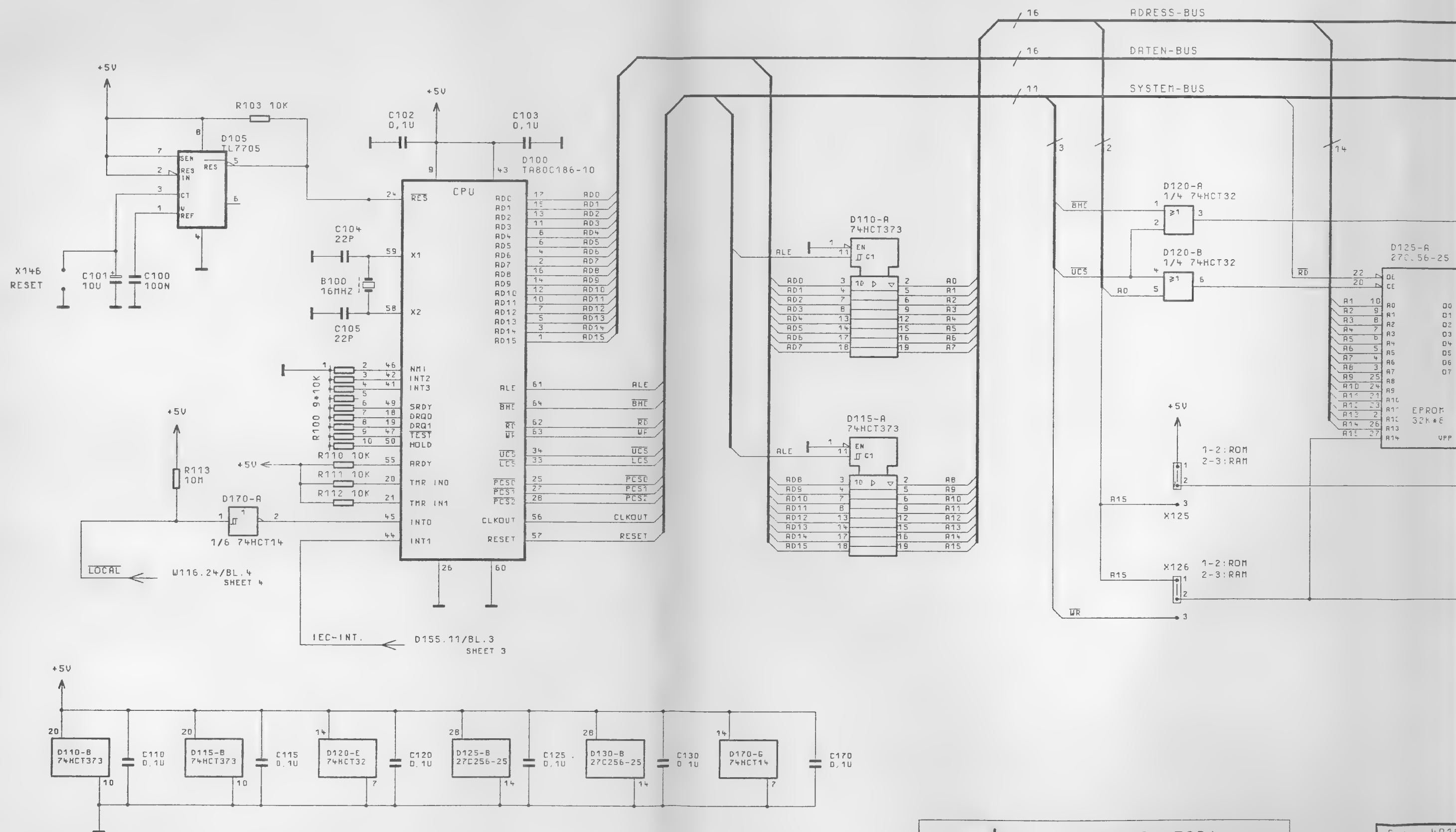
4 Coding Options

Coding jumper	Circuit diagram	Position	Function
X 125	822.1513 S, sheet 1	1-2 2-3	Normal operation: D125 and D 130 EPROM D125 and D 130 RAM
X 126	"		same as X 125
X 135	822.1513 S, sheet 2	1-2 2-3	Normal operation: D135 and D140 8K x 8 RAM D135 and D140 32K x 8 RAM



Block diagram EMFT IEC-BUS Board

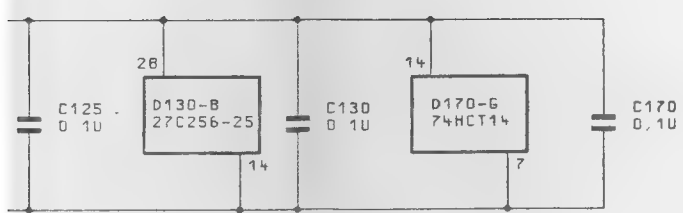
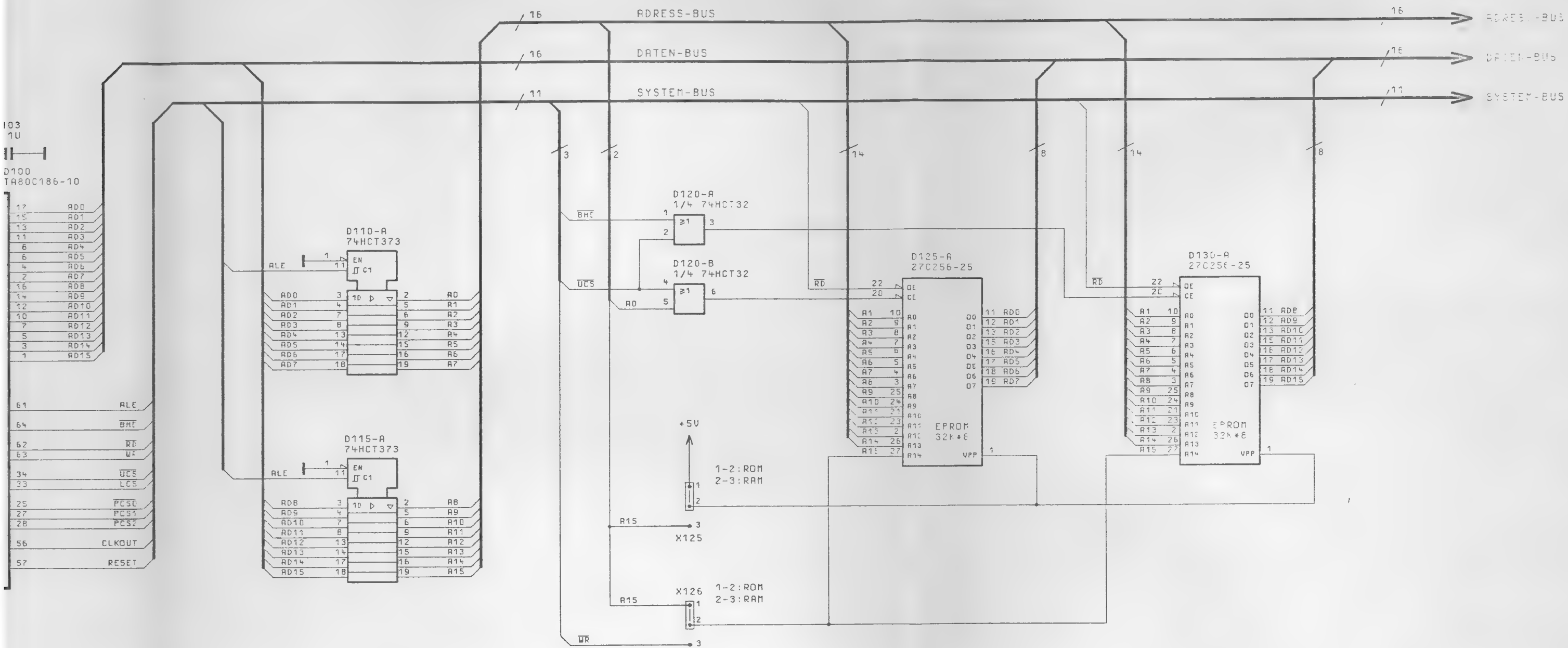




ACHTUNG: EGB!
ELEKTROSTATISCH GEFÄHRDETE
BAUELEMENTE ERFORDERN EINE
BESONDERE HANDHABUNG.

ATTENTION: ESD!
ELECTROSTATIC SENSITIVE
DEVICES REQUIRE A SPECIAL
HANDLING.

A	4016
REND	RENDPL
IND	MITTEL

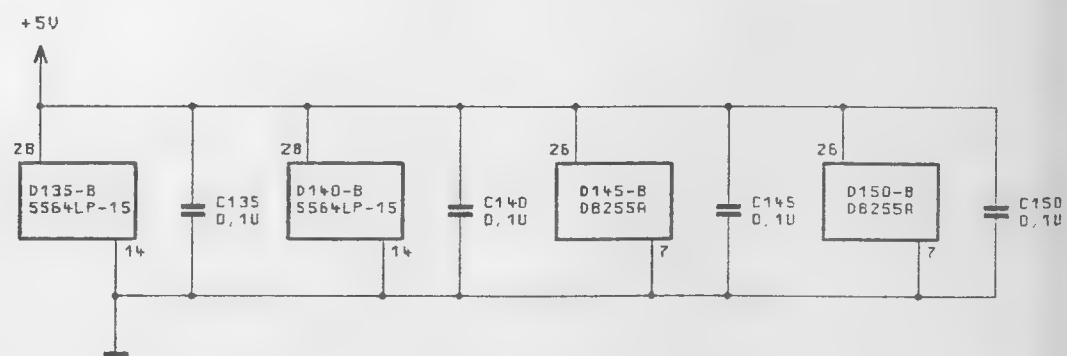
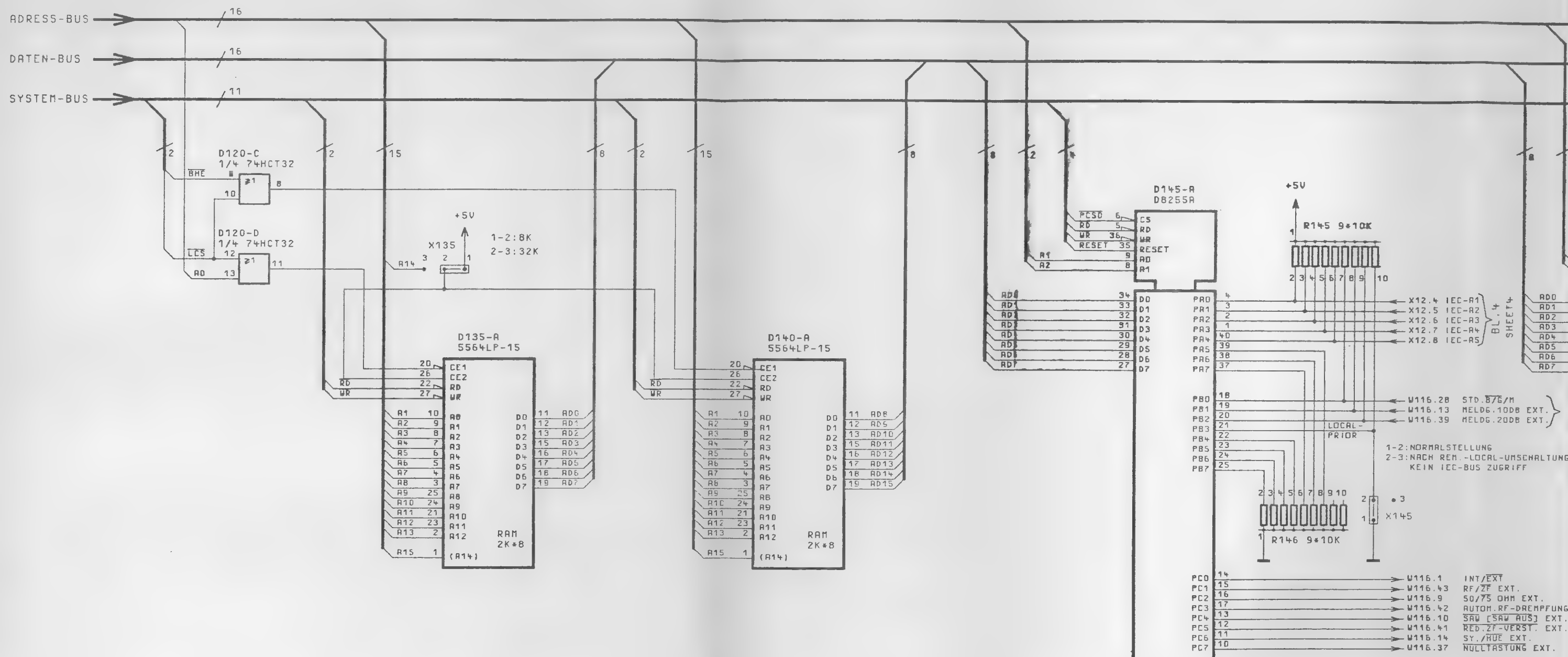


STROMLAUF GILT FUER VAR.02
CIRCUIT DIAGRAM IS VALID FOR MOD.02

ACHTUNG: EGB!
ELEKTROSTATISCH GEFAEHRDETE
BAUELEMENTE ERFORDERN EINE
BESONDERE HANDHABUNG.

ATTENTION: ESD!
ELECTROSTATIC SENSITIVE
DEVICES REQUIRE A SPECIAL
HANDLING.

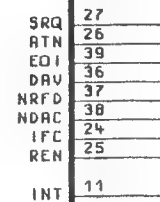
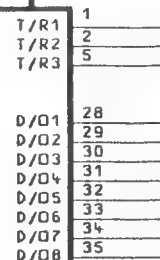
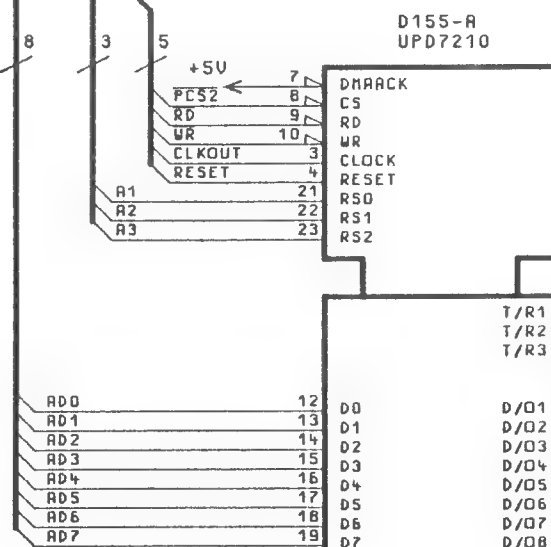
A	40163	108.88	RE	2KGB	TAG	NAME	BENENNUNG
				BEARB.		RE	
				GEPP.		SE	
				NOPM			
				PLOT1	29 7.88	*	
REND.	RENDERUNGS-	DATUM	NAME			ZEICHN.-NR.	BLATT-NR.
ING.	MITTEILUNG					822.1513.015	1
				ZU GEHET	EMFT	PER 1.V	U 4 BL
						821.4019	
						ERSTE 2	



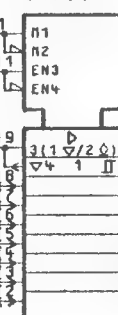
ACHTUNG: EGB!
 ELEKTROSTATISCH GEFÄHRDETE
 BAUELEMENTE ERFORDERN EINE
 BESONDERE HANDHABUNG.

ATTENTION: ESD!
 ELECTROSTATIC SENSITIVE
 DEVICES REQUIRE A SPECIAL
 HANDLING.

REND. IND. RENDERUNGS-MITTEILUNG



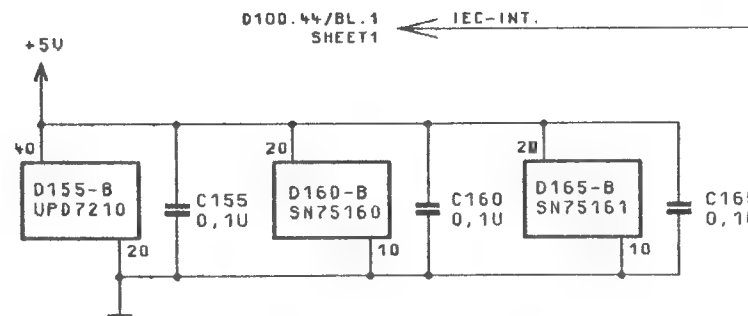
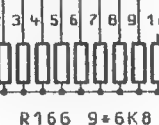
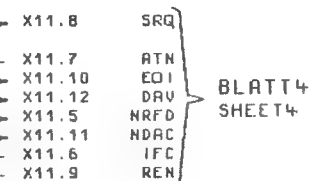
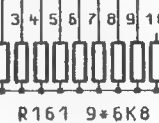
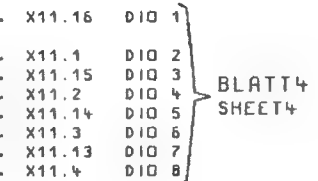
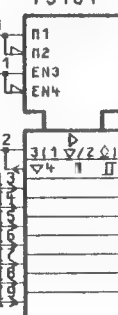
D160-A
SN75160



D170-D
1/6 74HCT14



D165-A
75161



STROMLAUF GILT FUER VAR.02
CIRCUIT DIAGRAM IS VALID FOR MOD.02

ACHTUNG: EGB!
ELEKTROSTATISCH GEFÄHRDETE
BAUELEMENTE ERFORDERN EINE
BESONDERE HANDHABUNG.

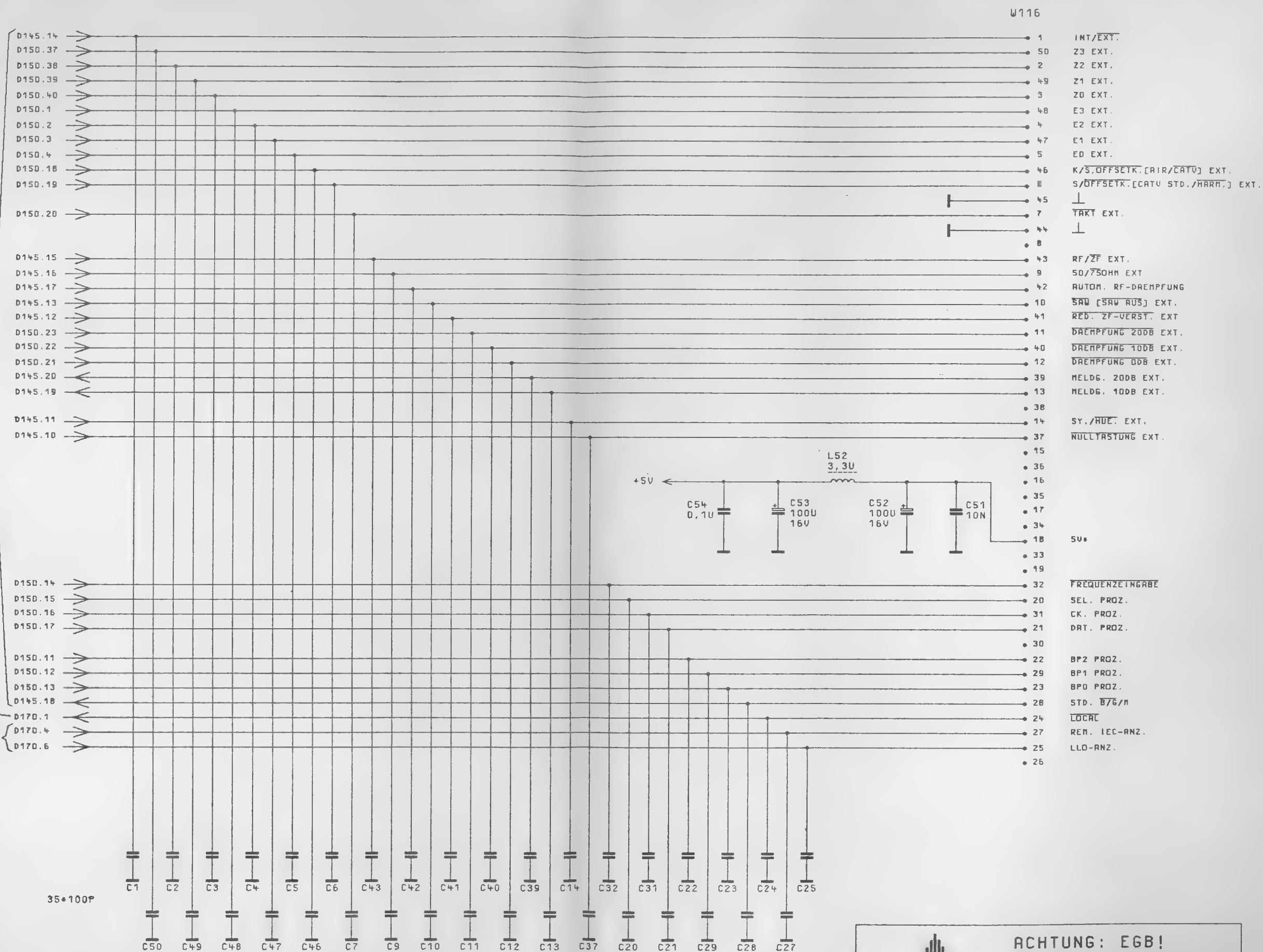
ATTENTION: ESD!
ELECTROSTATIC SENSITIVE
DEVICES REQUIRE A SPECIAL
HANDLING.

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				BEARB.		SE	IEC-BUS-ADAPTER	
				GEPR.		SE		
				NORM				
				PLOTT	6. 4.88	SE		
				ROHDE&SCHWARZ			ZEICHN.-NR.	BLATT-NR.
				ZU GERÄT EMFT			822.1513.015	3
REND. IND.	RENDERUNGS- MITTEILUNG	DATUM	NAME	REG. I.V. 821.4019			ERSTE Z.	V. 4 BL.

BEHALTEN WIR UNS ALLE RECHTE VOR

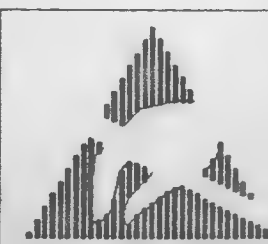
BLATT2
SHEET2

BLATT1
SHEET1
BLATT2
SHEET2



W116

1 INT/EXT.
50 Z3 EXT.
2 Z2 EXT.
49 Z1 EXT.
3 Z0 EXT.
48 E3 EXT.
4 E2 EXT.
47 E1 EXT.
5 ED EXT.
46 K/S, OFFSETK. [AIR/CATU] EXT.
45 S/OFFSETK. [CATU STD./HARM.] EXT.
7 TAKT EXT.
44
8
43 RF/ZF EXT.
9 50/750HM EXT
42 AUTOM. RF-DAMPFUNG
10 SAW [SAW AUS] EXT.
41 RED. ZF-VERST. EXT
11 DAMPFUNG 20DB EXT.
40 DAMPFUNG 10DB EXT.
12 DAMPFUNG 0DB EXT.
39 MELDG. 20DB EXT.
13 MELDG. 10DB EXT.
38
14 SY./HDE. EXT.
37 NULLLASTUNG EXT.
15
36
16
35
17
34
18 5V₊
33
19
32 FREQUENZEINGABE
20 SEL. PROZ.
31 CK. PROZ.
21 DAT. PROZ.
30
22 BP2 PROZ.
29 BP1 PROZ.
23 BP0 PROZ.
28 STD. B/G/M
24 LOCAL
27 REM. IEC-ANZ.
25 LLO-ANZ.
26



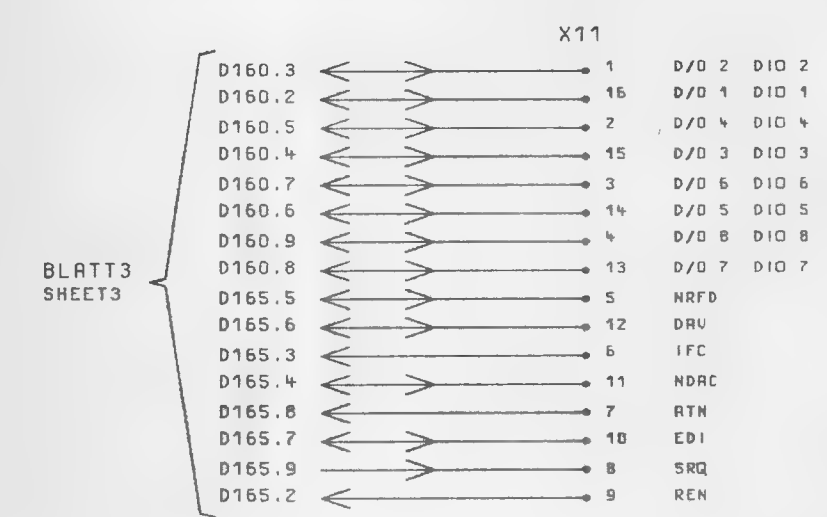
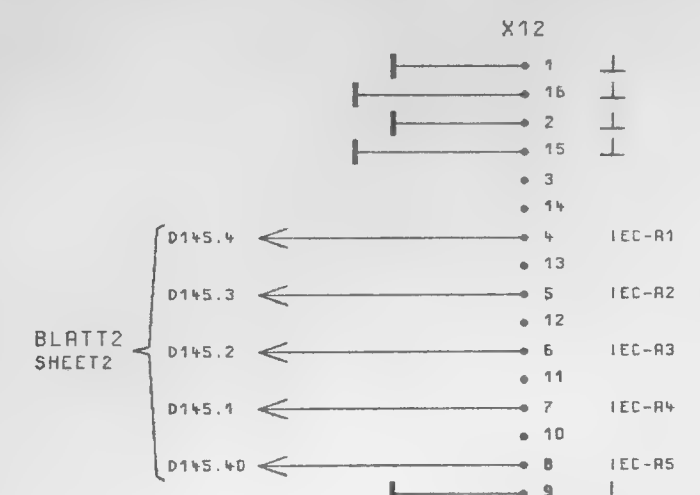
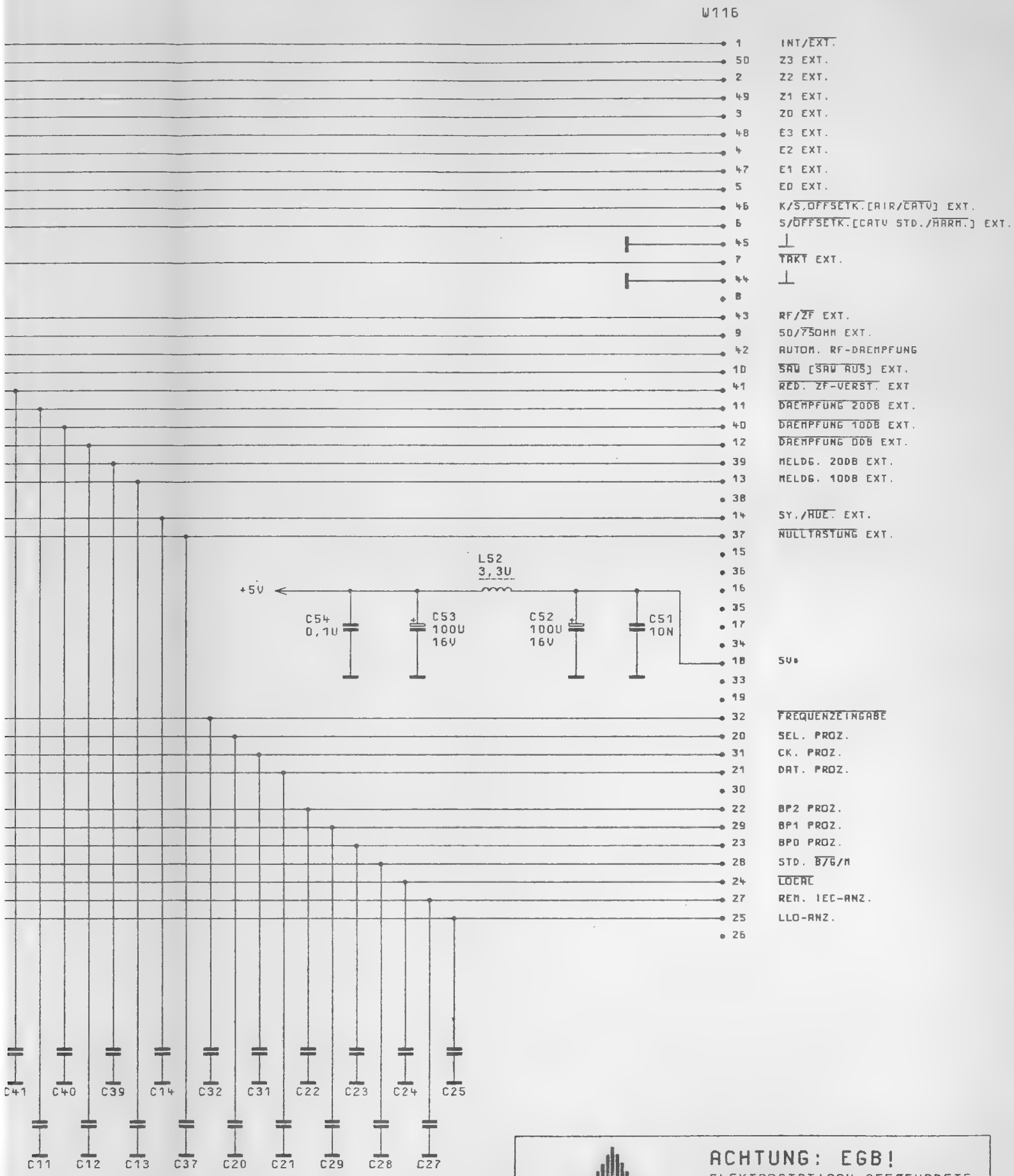
ACHTUNG: EGB!

ELEKTROSTATISCH GEFÄHRDETE
BAUELEMENTE ERFORDERN EINE
BESONDERE HANDHABUNG.

ATTENTION: ESD!


ELECTROSTATIC SENSITIVE
DEVICES REQUIRE A SPECIAL
HANDLING.

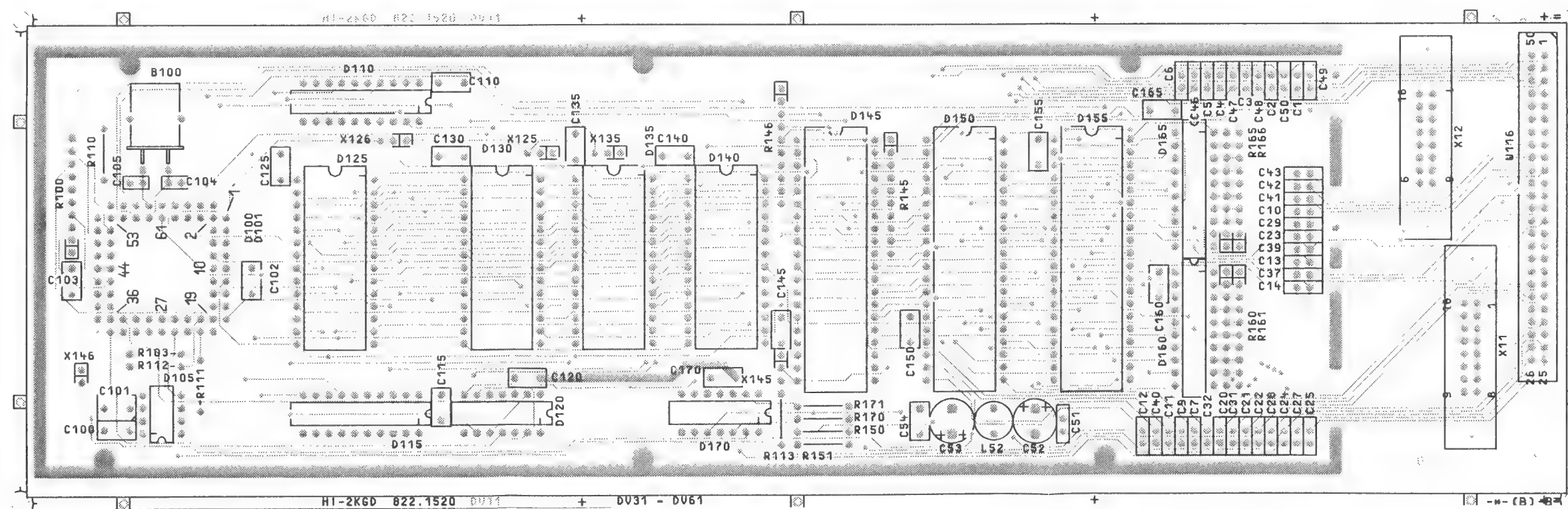
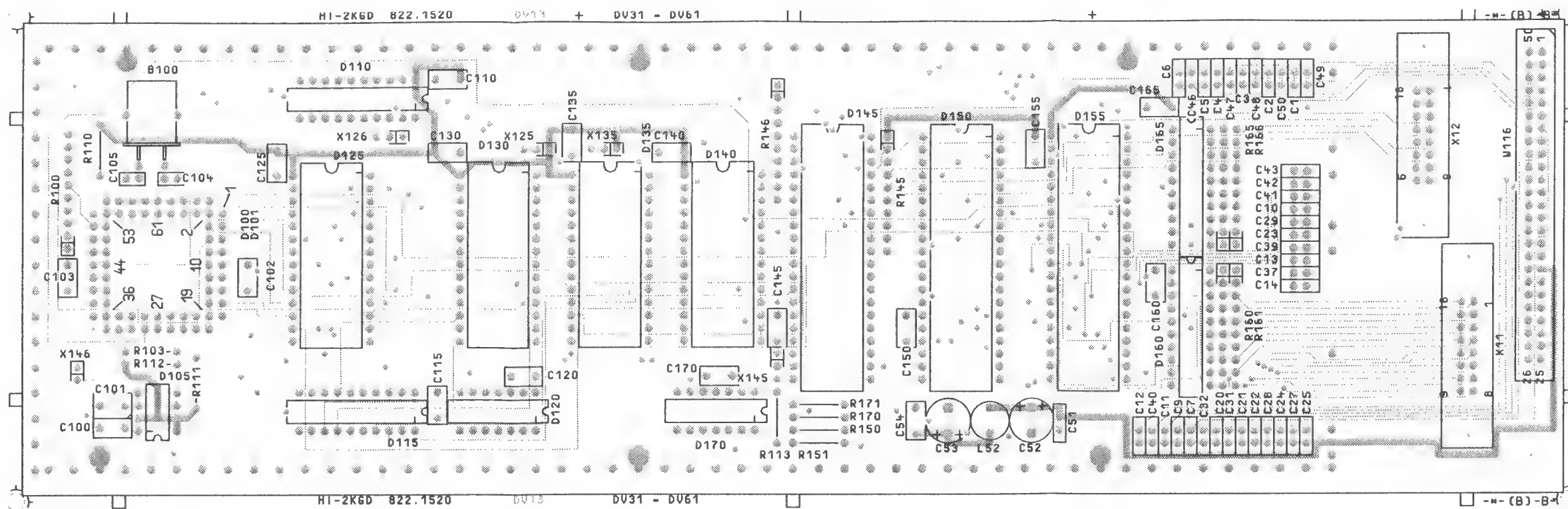
REND.
IND. RENDERUNGS
MITTEILUNG



STROMLAUF GILT FUER VAR.02
CIRCUIT DIAGRAM IS VALID FOR MOD.02


 **ACHTUNG: EGB!**
ELEKTROSTATISCH GEFÄHRDETE
BAUELEMENTE ERFORDERN EINE
BESONDERE HANDHABUNG.
ATTENTION: ESD!
ELECTROSTATIC SENSITIVE
DEVICES REQUIRE A SPECIAL
HANDLING.

				ZKGB	TAG	NAME	BENENNUNG			
				BEARB.		SE	IEC-BUS-ADAPTER			
				GEPR.		SE				
				NORM						
				PLOTT	6. 4.88	SE				
							ZEICHN.-NR.			BLATT-NR.
				ROHDE&SCHWARZ			822.1513.015			4
REND.	RENDERUNGS-	DATUM	NAME	ZU GERÄT			EMFT	REG.-I.N.	821.4019	ERSTE Z.
IND.	MITTEILUNG									V. 4 BL.



DV 11

Ansicht und Leitungsführung Lötseite
View of tracks on solder side

B		07.88	RE	Maße ohne Toleranzangabe		Maßstab 1 : 1			
						Halbzeug, Werkstoff			
				2KGB	Tag	Name		Benennung	
				Bearb	07.88	RE		IEC-BUS-ADAPTER	
				Gepr					
				Norm					
								Z	
				 ROHDE & SCHWARZ		Zeichn-Nr		Blatt-Nr	
						822.1513		3	
And Zust	Anderungs-Mitteilung	Tag	Name	zu Gerät EMFT		reg. I V 821.4019V		erste Z	
								v BI	

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
B100	EQ 16.000000MHZ CL30HC43U CRYSTAL 16MHZ	EQ 091.0321	KRISTALLVE N. R&S	SACHNUMMER	
C1 ..7	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C9 ..14	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C20 ..25	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C27	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C28	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C29	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C31	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C32	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C37	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C39 ..43	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C46 ..50	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C51	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C52	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D	
C53	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK 00CB 310 D	
C54	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C100	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C101	CE 10 UF+-20%16V 7X 4X 8 ELECTROLYTIC CAPACITOR	CE 022.8085	ROEDERSTEI	ETR 2 10/16 20%	
C102	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C103	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C104	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229.	
C105	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229	
C110	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C115	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C120	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C125	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C130	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C135	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C140	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C145	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C150	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C155	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C160	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C165	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C170	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
D100	BC TA80C186-10 16B.CPU CPU	BC 007.7946	INTEL	TA80C186-10	
D105	BO TL7705ACP VOLT.DETECT VOLTAGE SUPERVISOR	347.1170	TEXAS	TL7705ACP	
D110	BL PC74HCT373P 8XD-LATCH OCTAL D-TYPE LATCH	BL 571.3488	VALVO	PC74HCT373P	
ROHDE & SCHWARZ		AI	Schaltteilliste für Parts list for		Blatt Page
		03	1188	ED IEC-BUS-ADAPTER	822.1513.01 SA 1+

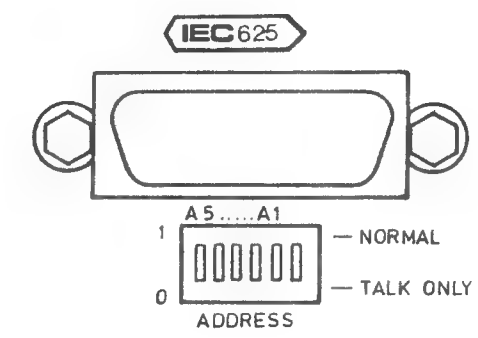
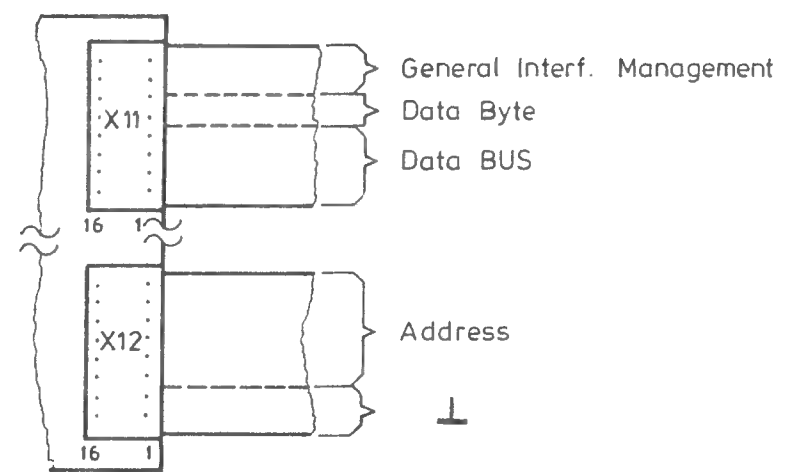
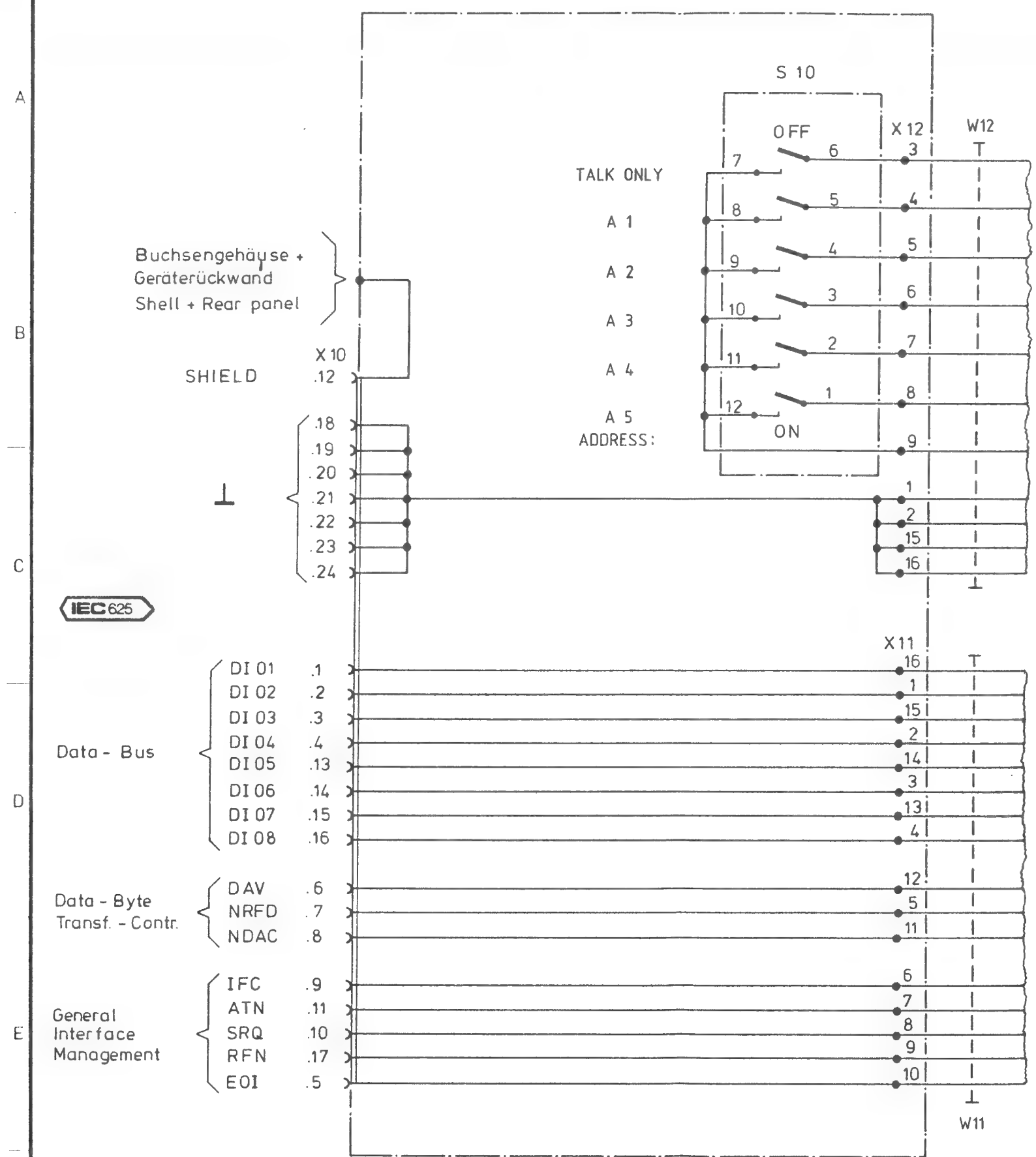
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B100	EQ 16.000000MHZ CL30HC43U CRYSTAL 16MHZ	EQ 091.0321	KRISTALLVE	N. R&S SACHNUMMER	
C1 ..7	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C9 ..14	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C20 ..25	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C27	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C28	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C29	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C31	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C32	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C37	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C39 ..43	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C46 ..50	CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541	VALVO	2222 678 10101	
C51	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C52	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D	
C53	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	ROEDERST	EK OOCB 310 D	
C54	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C100	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C101	CE 10 UF+-20%16V 7X 4X 8 ELECTROLYTIC CAPACITOR	CE 022.8085	ROEDERSTEI	ETR 2 10/16 20%	
C102	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C103	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C104	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229.	
C105	CC 22PF+-2%4X5NPO CAPACITOR	CC 087.6464	VALVO	2222 678 10229	
C110	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C115	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C120	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C125	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C130	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C135	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C140	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C145	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C150	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C155	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C160	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C165	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C170	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
D100	BC TA80C186-10 16B.CPU CPU	BC 007.7946	INTEL	TA80C186-10	
D105	BO TL7705ACP VOLT.DETECT VOLTAGE SUPERVISOR	347.1170	TEXAS	TL7705ACP	
D110	BL PC74HCT373P 8XD-LATCH OCTAL D-TYPE LATCH	BL 571.3488	VALVO	PC74HCT373P	
ROHDE & SCHWARZ		AI	Schaltteilliste für Parts list for		Blatt Page
		03 1188	ED IEC-BUS-ADAPTER		822.1513.01 SA 1+

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
D115	BL PC74HCT373P 8XD-LATCH OCTAL D-TYPE LATCH	BL 571.3488	VALVO	PC74HCT373P	
D120	BL PC74HCT32P 4X2IN.ORG QUAD 2-INPUT OR GATE	BL 571.3420	VALVO	PC74HCT32P	
D125	BC SOFTW.N.BESTUECKUNGSPL SOFTW. SEE COMPONENTSPLAN	651.6701.90			
D130	BC SOFTW.N.BESTUECKUNGSPL SOFTW. SEE COMPONENTSPLAN	651.6701.90			
D135	BC TC5564PL-15 8KX8 SRAM SRAM	BC 006.9645	TOSHIBA	TC5564PL-15	
D140	BC TC5564PL-15 8KX8 SRAM SRAM	BC 006.9645	TOSHIBA	TC5564PL-15	
D145	BC D8255A PROGR.I/O-IF I/O-PORT	086.9830	INTEL	P8255A (PLASTIK)(-5)	
D150	BC D8255A PROGR.I/O-IF I/O-PORT	086.9830	INTEL	P8255A (PLASTIK)(-5)	
D155	BC UPD7210C GPIB IF CONTR GPIB INTERFACE CONTROLLER	BC 620.3130	NEC	UPD7210C	
D160	BJ SN75160AN 8XBUS TRANC BUS TRANSCEIVER	BJ 345.6517	TEXAS INST	SN75160AN	
D165	BJ SN75161AN 8XBUS TRANC BUS TRANSCEIVER	BJ 345.6523	TEXAS INST	SN75161AN	
D170	BL PC74HCT14P 6XSCH.INV HEX SCHMITT-TRIGGER	BL 379.7022	VALVO	PC74HCT14P	
L52	LD 3,3UH 2% 1,35A OR14 CHOKE	LD 567.3964	JAHRE	74.11-3R30G	
R100	RN 9X 10KOHM+-SIL10 H5 RESISTOR NETWORK	RN 343.4523	BOURNS	4310R-101-103	
R103	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R110	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R111	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R112	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R113	RL 0,35W 10MOHM+-1%TK50 RESISTOR	RL 620.0318	RESISTA	MK2 10MOHM 1% TK50	
R145	RN 9X 10KOHM+-SIL10 H5 RESISTOR NETWORK	RN 343.4523	BOURNS	4310R-101-103	
R146	RN 9X 10KOHM+-SIL10 H5 RESISTOR NETWORK	RN 343.4523	BOURNS	4310R-101-103	
R150	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R151	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R160	RN 9X3,3KOHM+-2%SIL10 H5 RESISTOR NETWORK	RN 340.2765	BOURNS	4310R-101-332	
R161	RN 9X6,8KOHM+-2%SIL10 H5 RESISTOR NETWORK	RN 340.2759	BOURNS	4310R-101-682	
R165	RN 9X3,3KOHM+-2%SIL10 H5 RESISTOR NETWORK	RN 340.2765	BOURNS	4310R-101-332	
R166	RN 9X6,8KOHM+-2%SIL10 H5 RESISTOR NETWORK	RN 340.2759	BOURNS	4310R-101-682	
R170	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R171	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
X11	FP STECKERLEISTE 16POL. CONNECTOR 16POL.	FP 645.6761	ROBINSON	IDH-16PK-SR3-TG30-S	
X12	FP STECKERLEISTE 16POL. CONNECTOR 16POL.	FP 645.6761	ROBINSON	IDH-16PK-SR3-TG30-S	

- ENDE -

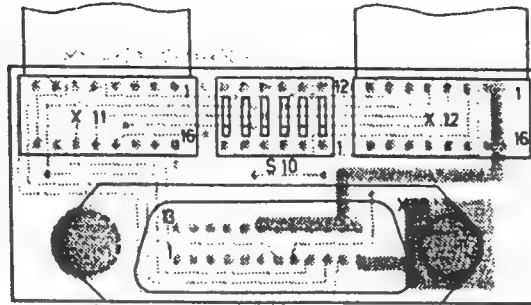
ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	03	1188	ED IEC-BUS-ADAPTER	822.1513.01 SA	2-

Für diese Unterlage benötigen wir uns alle Rechte vor

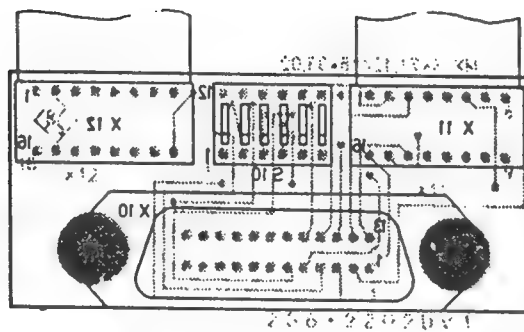


				Maße ohne Toleranzangabe		Maßstab	
						Halbzeug, Werkstoff	
				2KGD	Tag	Name	Benennung IEC - 625 - PLATTE
				Bearb	05.88	OS	
				Gepr			
				Norm			
							Zeichn.-Nr
				zu Gerät EMF			822.1559 S
				reg. i. V. 821.4019 V			erste Z.
And. Zust.	Änderungs-Mitteilung	Tag	Name	Blatt-Nr 1 v. 1 Bl			


Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



Ansicht und Leitungsführung Lötseite
View of tracks on solder side



Für diese Unterlage behalten
wir uns alle Rechte vor

			Maße ohne Toleranzangabe		Maßstab 1 : 1			
					Halbzeug Werkstoff			
			2KGD	Tag	Name	Benennung		Z
			Bearb	05.88	OS	IEC - 625 - Platte		
			Gepr					
			Norm					
			 ROHDE & SCHWARZ			Zeichn.-Nr.		6.3.1.1
						822.1559		2
								2 B
Ang Zus:	Anderungs- Mittellung	Tag	Name		zu Gera:	EMF	reg. i. V.	821.4019 V
						erste Z		

Proj. von
Thone E



Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
.	ZUGEH.STROML./CIRC.DIAGR. 822.1559 S				
S10	SK COD.SCH.DIL 6P. O.BES. SWITCH	SK 238.2160	GRAYHILL	R&SZCHNG.238.2160	
W11	DX FLACHBANDKABEL	822.1536			
W12	DX FLACHBANDKABEL	822.1565			
X10	FM BUCHSENLEISTE 24POL 24-SOCKET INSERT	FM 099.2246	AMPHENOL	57-20240-14	
					- ENDE -

R&S-Schlüsseliste

Die R&S-Schaltpläne zeigen in der Spalte "Benennung/Beschreibung" die technischen Daten der Bauelemente in Kurzform. Die Art des Bauelements (z. B. Schicht-, Draht-Widerstand usw.) beschreiben die 2 Kennbuchstaben vor der "Benennung" (evtl. auch vor der "Sachnummer"), die nachfolgend erklärt werden. In Ersatzteil-Bestellungen an R&S ist stets die Angabe der vollständigen Sachnummer erforderlich.

R&S key list

The R&S Parts Lists give the technical data of the components in short form in the column "Benennung/Beschreibung" (designation). The type of component (e.g. depos-carbon resistor, wire-wound resistor etc.) is indicated by 2 identification letters before the designation, possibly also before the "Sachnummer" (order number), which are explained below. When ordering spare parts from R&S, the complete order number must always be specified.

Liste des symboles de référence R&S

La colonne « Désignation/description » des listes de pièces de R&S indique les caractéristiques des éléments sous forme abrégée. Le type d'élément (p. ex. résistance à couche, résistance bobinée etc.) est décrit par les deux lettres précédant la désignation (et éventuellement le numéro de référence), dont voici l'explication. Prière d'indiquer le numéro de référence (« Sachnummer ») complet dans toute commande de pièces de rechange.

Kennbuchst.	Art des Bauelements	Identifiz. letter	Type of component	Symbole	Type d'élément
A	Aktive Bauelemente, Halbleiter	A	Active components, semiconductors	A	Components actifs, semiconducteurs
AD	Universal-diode, z.B. Gleichrichter, Sperrdiode	AD	General-purpose diode, e.g. rectifier, high-resistance diode	AD	Diode d'usage général, p. ex. redresseur, diode à haute résistance
AE	Spezialdiode, z.B. Tunnel-, Kapazitäts-, Zener-Diode	AE	Diode (special), e.g. tunnel diode, varactor, Zener diode	AE	Diode spéciale, p. ex. diode tunnel, varactor, diode Zener
AF	Fotoelement, z.B. Foto-Diode, -Transistor, -Widerstand, Leuchtdiode	AF	Light-sensitive component, e.g. resistor, diode, transistor, LED	AF	Composant photoélectrique, p. ex. diode, transistor, résistance photoél., D.E.L.
AG	Leistungs-Gleichrichter, z.B. Thyristor, Triac, Selengleichrichter	AG	Power rectifier, e.g. thyristor, triac, selenium rectifier	AG	Redresseur de puissance, p. ex. thyristor, triac, redresseur au sélénium
AK	Kleinsignal-Transistor	AK	Low-power transistor	AK	Transistor faible puissance
AL	Leistungs-Transistor	AL	High-power transistor	AL	Transistor grande puissance
AM	Spezial-Transistor, z.B. FET, MOSFET	AM	Transistor (special), e.g. FET, MOS-FET	AM	Transistor spécial, p. ex. FET, MOSTEC
AP	Peltier-, Hall-Element	AP	Peltier element, Hall element	AP	Element Peltier, élément Hall
AR	Röhre für Empfänger, Verstärker, Gleichrichter	AR	Valve for receiver, amplifier, rectifier	AR	Tube pour récepteur, amplificateur, redresseur
AS	Spezialröhre, z.B. Senderöhre, EW-Widerstand, Stabilisator	AS	Valve (special), e.g. for transmitter, heater, ballast valve	AS	Tube (spécial), p. ex. pour émetteur, résistance fer-hydrogène, ballast
AT	Kathodenstrahlröhre, z.B. Bildröhre, Ziffern-Anzeigeröhre	AT	Cathode ray tube, e.g. picture tube, digital indicator tube	AT	Tube à rayon cathodique, p. ex. tube à image, tube à affichage numérique
AW	Spannungs- oder temperaturabhängiger Widerstand	AW	Voltage- or temperature-dependent resistor	AW	Varistance ou thermistance
B	Bausteine	B	PC boards, chips	B	Cartes imprimées, puces
BC	Integr. Schaltkreis (Microcomp.)	BC	Integrated circuit (interface, A/D)	BC	Circuit intégré (microprocesseur)
BD	R&S-Dünnschichtschaltung	BD	R&S thinfilm circuit	BD	Circuit à couche mince R&S
BG	Gerätebaugruppe	BG	Subassembly	BG	Sous-ensemble
BJ	Integr. Schaltkreis (Interface, A/D-Wandler)	BJ	Integrated circuit (interface, A/D converter)	BJ	Circuit intégré (interface, convertisseur A/N)
BK	Kernspeicher, Magnetspeicher	BK	Core memory, magnetic memory	BK	Mémoire à tores, mémoire magnétique
BL	Log. Schaltkreis, z.B. DTL, TTL, HTL, ECL, C-MOS	BL	Logic circuit, e.g. DTL, TTL, HTL, ECL, C-MOS	BL	Circuit logique, p. ex. DTL, TTL, HTL, ECL, C-MOS
BM	Hybridbaustein, z.B. Mischer, Tuner, Modulator	BM	Hybrid chip, e.g. mixer, tuner, modulator	BM	Puce hybride, p. ex. mélangeur, tuner, modulateur
BO	Analogschaltkreis, z.B. Operationsverstärker	BO	Analog circuit, e.g. operational amplifier	BO	Circuit analogique, p. ex. amplificateur opérationnel
BP	Optobaustein, z.B. Anzeigeeinheit, Koppler	BP	Optoelement, e.g. display, coupler	BP	Élément optique, p. ex. afficheur, coupleur
BS	Schalt- und Steuerbaustein, elektronischer Sensor	BS	Switching and control modul, electronic sensor	BS	Modul de commutation et de commande, sonde électronique
BV	Stromversorgung, Übersp.-Schutz	BV	Power pack, protective circuit	BV	Alimentation, protection surcharge



Kenn- buchst.	Art des Bauelementes	Identif. letter	Type of component	Sym- bole	Type d'élément
C	Kondensatoren	C	Capacitors	C	Condensateurs
CB	Bypass-, Durchf.-Kondensator	CB	Bypass capacitor, feed-through capacitor	CB	Condensateur bypass, condensateur de traversée
CC	Keramischer Kondensator	CC	Ceramic capacitor	CC	Condensateur céramique
CD	Drehkondensator	CD	Variable capacitor	CD	Condensateur variable
CE	Elektrolytkondensator	CE	Electrolytic capacitor	CE	Condensateur électrolytique
CG	Glimmerkondensator	CG	Mica capacitor	CG	Condensateur au mica
CH	Sperrschichtkondensator	CH	Semiconductor capacitor	CH	Condensateur semiconducteur
CK	Kunstfolienkondensator	CK	Synthetic-foil capacitor	CK	Condensateur à feuille synthétique
CL	Ker. Höchsp.-Kondensator	CL	HV capacitor (ceramic)	CL	Condensateur HT céramique
CM	Metallpapier-Kondensator	CM	MP capacitor	CM	Condensateur à papier métallisé
CN	Kondensatornetzwerk	CN	Capacitor network	CN	Reseau capacitif
CP	Papierkondensator	CP	Paper capacitor	CP	Condensateur au papier
CS	Störschutzkondensator	CS	Interference-suppression capacitor	CS	Condensateur anti-parasite
CT	Trimmkondensator	CT	Trimmer capacitor	CT	Condensateur ajustable
CV	Vakuum-Kondensator	CV	Vacuum capacitor	CV	Condensateur à vide
D	Drähte, Leitungen	D	Wires, lines	D	Fils, lignes
DD	Schalt- und Wickeldraht	DD	Hook-up or winding wire	DD	Fil de câblage, fil de bobinage
DF	Flachleitung, Litze	DF	Flat multiple line, stranded wire	DF	Ligne plate, ligne torsadée
DG	Abgeschirmte Leitung	DG	Shielded line	DG	Ligne blindée
DH	Koaxialkabel	DH	Coaxial line	DH	Ligne coaxiale
DN	Antenne	DN	Antenna	DN	Antenne
DS	Anschlußkabel (mehradrig)	DS	Connecting cable, multicore	DS	Câble de connexion (multiconducteur)
E	Elektrische Teile	E	Electric parts	E	Organes électriques
EB	Blei-, NC-Akku, Batterie	EB	Lead or alkaline accumulator, battery	EB	Accumulateur Pb/NC batterie
EF	Glühlampe, Leuchte	EF	Incandescent lamp, pilot lamp	EF	Lampe à incandescence, voyant
EG	Glimmlampe, Entladungslampe	EG	Glow lamp, discharge lamp	EG	Lampe à luminescence, lampe à décharge
EK	Kontakt-Streifen, -Feder	EK	Contact clip, contact spring	EK	Lame de contact, ressort de contact
EL	Lautsprecher, Kopfhörer, Mikrofon	EL	Loudspeaker, headphones, microphone	EL	Haut-parleur, casque, microphone
EM	Motor, Hubmagnet, Drehfeldsystem	EM	Motor, lifting magnet, synchro system	EM	Moteur, électro-aimant de levage, système synchro
EO	Oszillator, z.B. Quarzoszillator	EO	Oscillator, e.g. crystal oscillator	EO	Oscillateur, p.ex. oscillateur à quartz
EP	Tief-, Band-, Höchsp.-Bandsperr-, Diskriminator	EP	Lowpass, bandpass, highpass filter, band-stop filter, discriminator	EP	Filter passe bas, passe-bande, passe-haut, suppression de bande, discriminateur
EQ	Schwing-, Filter-Quarz	EQ	Oscillator or filter crystal	EQ	Quartz oscillator, quartz de filtre
ER	Resonator, piezoelekt./magnetostriktiv	ER	Resonator, piezoelectric/magnetostrictive	ER	Résonateur piezo-électrique/magneto-strictif
ES	Passive SHF-Bauteile	ES	Passive SHF-components	ES	Composant SHF passif
ET	Thermostat	ET	Thermostat	ET	Thermostat
EV	Lüfter, Gebläse	EV	Ventilator, blower	EV	Ventilateur, soufflerie
F	Fassungen, Steckverbindungen	F	Sockets, connectors	F	Douilles, connecteurs
FA	Dezifix/Prezifix A	FA	R&S coaxial connector, Dezifix/Prezifix A	FA	Dezifix, Prezifix A
FB	Dezifix B	FB	R&S coaxial connector Dezifix B	FB	Dezifix B
FC	Dezifix C	FC	R&S coaxial connector Dezifix C	FC	Dezifix C
FD	Dezifix D	FD	R&S coaxial connector Dezifix D	FD	Dezifix D
FE	Dezifix E/J	FE	R&S coaxial connector Dezifix E/J	FE	Dezifix E/J
FF	Dezifix F	FF	R&S coaxial connector Dezifix F	FF	Dezifix F



Kenn- buchst.	Art des Bauelementes	Identif.- letter	Type of component	Sym- bole	Type d'élément
FG	Koax-Umrüstsatz	FG	Coaxial screw-in assembly	FG	Ensemble vissable coaxial
FH	Koax-Übergang auf Fremdsystem	FH	Coaxial adapter	FH	Adaptateur coaxial
FJ	BNC-Systemteil	FJ	BNC screw-in assembly	FJ	Ensemble vissable BNC
FK	Koaxial-UHF-Systemteil	FK	Coaxial UHF screw-in assembly	FK	Ensemble vissable coaxial UHF
FM	Mehrfachstecker, Buchsenleiste	FM	Multipoint connector	FM	Connecteur multiple
FN	Netz-Steckverbindung	FN	AC-supply connector	FN	Connecteur secteur
FO	Runde Mehrfach-Steckverbindung	FO	Round multipoint connector	FO	Connecteur multipôles rond
FP	Druckschalt.-Steckverbindung	FP	Multipoint connector for PC boards	FP	Connecteur multipôles pour cartes imprimées
FR	Fassung für Lampe, Sicherung, usw.	FR	Socket for lamp, fuse, etc.	FR	Douille pour lampe, fusible etc.
FT	Schwachstrom-Steckverbindung	FT	LV plug and socket	FT	Connecteur pour faible courant
FU	Hochsp.-Steckverbindung	FU	HV plug and socket	FU	Connecteur pour haute tension
FV	Verbinder (z.B. AMP)	FV	Push-on connector	FV	Connecteur à enfichage
J	Meßinstrumente	J	Indicators	J	Indicateurs
JD	Drehspul-Anzeiginstrument	JD	Moving-coil meter	JD	Galvanomètre à cadre mobile
JE	Dreheisen-Anzeiginstrument	JE	Moving-iron meter	JE	Galvanomètre à fer mobile
JF	Frequenzmesser	JF	Frequency meter	JF	Fréquencemètre
JG	Drehspulinstrument mit Gleichrichter	JG	Moving-coil meter with rectifier	JG	Galvanomètre à cadre mobile avec redresseur
JH	Betriebstundenzähler	JH	Operating-hours counter	JH	Compteur d'heures de fonctionnement
JJ	Impulszähler	JJ	Pulse counter	JJ	Compteur d'impulsions
JK	Kleinst-Instrument, z.B. Abstimmanzeiger	JK	Mini-instrument, e.g. tuning indicator	JK	Petit indicateur, p.ex. indicateur d'accord
JM	Mechanisches Zählwerk	JM	Mechanical counter	JM	Compteur mécanique
JP	Projektions-Instrument (Leuchtziffer)	JP	Digital display	JP	Afficheur numérique
JQ	Quotientenmesser (Kreuzspulinstrument)	JQ	Ratiometer (cross coil)	JQ	Quotientmètre (à cadres croisés)
JS	Spiegelgalvanometer	JS	Reflecting galvanometer	JS	Galvanomètre à miroir
JU	Uhrwerk	JU	Clockwork	JU	Mouvement d'horlogerie
JW	Elektrodyn. Anzeiginstrument	JW	Electrodynamic meter	JW	Instrument électrodynamique
L	Induktivitäten, Magnetik	L	Inductors, magnetic components	L	Composants inductifs et magnétiques
LC	Keramische Spule	LC	Ceramic coil	LC	Bobine céramique
LD	Netz-, HF-Drossel, Df-Filter	LD	Choke, lead-through filter	LD	Self de choc, filtre de traversée
LE	Einzelkreis, Bandfilter	LE	Single-tuned circuit, bandpass filter	LE	Circuit accordé, filtre passe-bande
LP	Permanentmagnet	LP	Permanent magnet	LP	Aimant permanent
LT	Netztransformator	LT	Power transformer	LT	Transformateur secteur
LU	NF-Übertrager	LU	AF transformer	LU	Transformateur BF
LV	Variometer	LV	Variometer	LV	Variomètre
R	Widerstände	R	Resistors	R	Résistances
RD	Drahtwiderstand	RD	Wire-wound resistor	RD	Résistance bobinée
RF	Kohleschicht-Widerstand	RF	Carbon-film resistor	RF	Résistance à couche de carbone
RG	Metallglasur-Widerstand	RG	Metal-coated resistor	RG	Résistance à couche métallique
RJ	Metalloxyd-Widerstand	RJ	Metal-oxide resistor	RJ	Résistance à oxyde métallique
RL	Metallfilm-Widerstand	RL	Metal-film resistor	RL	Résistance à film métallique
RM	Widerstandsdraht	RM	Resistance wire	RM	Fil de résistance
RN	Widerstandsnetzwerk	RN	Resistor network	RN	Réseau de résistances
RR	Draht-Potentiometer	RR	Wire-wound potentiometer	RR	Potentiomètre bobiné
RS	Schicht-Potentiometer	RS	Carbon-film potentiometer	RS	Potentiomètre à couche



Kenn- buchst.	Art des Bauelementes	Identif.- letter	Type of component	Sym- bole	Type d'élément
RT	Dämpfungsglied, Abschluß- widerstand	RT	Attenuator, termination	RT	Atténuateur, charge
RV	Drahtwiderstand mit Abgriff	RV	Wire-wound resistor, tapped	RV	Résistance bobinée à prise
RW	Wendelpotentiometer	RW	Helical potentiometer	RW	Potentiomètre helicoidal
S	Schalter, Relais, Sicherungen	S	Switches, relays, fuses	S	Commutateurs, relais, fusibles
SB	Drucktastenschalter	SB	Pushbutton switch	SB	Commutateur à touche
SD	Drehschalter	SD	Rotary switch	SD	Commutateur rotatif
SF	Kontaktfedersatz	SF	Spring contact assembly	SF	Jeu de ressorts de contact
SH	HF-Koaxialschalter, -Relais, -Teiler	SH	Coaxial RF switch, RF relay, RF attenuator	SH	Commutateur RF coaxial, relais RF, atténuateur RF
SK	Kipp-, Wipp- und Schiebeschalter	SK	Toggle switch, slide switch	SK	Commutateur à bascule, à glissière
SL	Leistungsschalter Netz/HF	SL	AC supply switch, high-power RF switch	SL	Commutateur secteur, de puissance RF
SM	Mikroschalter	SM	Microswitch	SM	Microrupteur
SN	Elektromagnet, Relais	SN	Electromagnetic relay	SN	Relais électromagnétique
SP	Leistungsrelais, Luftschütz	SP	Power relay, air-type contactor	SP	Relais de puissance, contacteur à air
SR	Reedrelais	SR	Reed relay	SR	Relais reed
SS	Sicherung, Schutzschalter	SS	Fuse, automatic cut-out	SS	Fusible, coupe-circuit automatique
ST	Thermoschalter	ST	Thermal circuit breaker	ST	Disjoncteur thermique
SU	Überspannungs-Ableiter	SU	Arrester	SU	Eclateur
SW	Wechselrichter, Näherungsschalter	SW	Inverter (DC-AC), proximity switch	SW	Inverseur (DC-AC), commutateur de proximité
SZ	Zeitschalter	SZ	Time switch	SZ	Interrupteur horaire
V	Verbindungselemente	V	Connecting elements	V	Éléments de raccordement
VK	Klemme, Klemmleiste	VK	Clamp, terminal strip	VK	Pince, règlette à bornes
VL	Lötöse, Stützpunkt	VL	Soldering lug	VL	Cosse à souder
VS	Schraube, Mutter, Scheibe	VS	Screw, nut, washer	VS	Vis, écrou, disque

Farbcode für Widerstände und Kondensatoren / Colour code for resistors and capacitors / Code couleur pour résistances et condensateurs

Anmerkung:
Die Wertangabe der weitgehend miniaturisierten Bauelemente erfolgt überwiegend durch Farbkennzeichnungen, deren Bedeutung der nachfolgenden Tabelle entnommen werden kann.

Note:
The electrical values of the largely miniaturized components are mainly identified by a colour code, the meaning of which can be taken from the table below.

Remarque:
Les valeurs électriques des composants fort miniaturisés sont indiquées dans la plupart des cas par un code couleur dont voici l'explication.

HINWEIS:
Im Zuge des technischen Fortschrittes setzt R&S zunehmend Metallschichtwiderstände mit 1% Toleranz anstelle von Kohleschichtwiderständen mit 5% Toleranz ein. Metallschichtwiderstände können sich dabei an Stellen befinden, an denen gemäß Schaltteilleiste Kohleschichtwiderstände vorgesehen sind. Etwaige geringfügige Differenzen der Nennwerte zwischen Stromlaufplan, Schaltteilleiste und Gerät liegen im zulässigen Toleranzbereich.

N.B.:
Following the state of the art R&S makes increasing use of metal-film resistors (1% tolerance) instead of carbon-film resistors (5% tolerance). Metal-film resistors may have been employed where carbon-film resistors are specified in the parts list. Any slight differences of nominal values between circuit diagram, parts list and equipment are within tolerance.

N.B.:
Suivant le progrès technique R&S utilise de plus en plus des résistances à film métallique (tolérance 1%) au lieu des résistances à couche de carbone (tolérance 5%). Des résistances à film métallique peuvent se trouver en des points où des types à couche de carbone figurent dans la liste des composants. Les différences minimales des valeurs nominales existant éventuellement entre le schéma de circuit, la liste des composants et l'appareil sont dans la marge de tolérance.

Farbe/Colour/Couleur	A	B	C	D	Anordnungsbeispiele für Examples for Exemple pour	Definition* / Définition*
Schwarz/Black/Noir	-	0			Widerstände (R)	Kennzeichen A (Bauteilfarbe/1. Farbring) = 1. Zahl:
Braun/Brown/Marron	1	1	0	± 1%	Resistors (R)	(body colour or first coloured ring) = 1st digit:
Rot/Red/Rouge	2	2	00	± 2%	Résistance (R)	(couleur du corps ou 1er anneau) = 1er chiffre:
Orange/Orange	3	3	000			Kennzeichen B (Bauteilende/2. Farbring) = 2. Zahl:
Gelb/Yellow/Jaune	4	4	0000			(body end or second coloured ring) = 2nd digit:
Grün/Green/Vert	5	5	00000	± 0.5%		(bout du corps ou 2e anneau) = 2e chiffre:
Blau/Blue/Bleu	6	6	000000			Kennzeichen C (Punkt/3. Farbring) = 3. Zahl = Zahl der Nullen:
Violett/Violet	7	7	-	± 0.1%		(dot or third coloured ring) = number of zeroes:
Grau/Gray/Gris	8	8	-			(point ou 3e anneau) = nombre de zéros:
Weiß/White/Blanc	9	9	-			Kennzeichen D (Punkt/4. Farbring) = Toleranz des Nennwerts in %:
Geld/Gold	-	-	-	± 5%		(Fehlendes Kennzeichen für D bedeutet ±20%)
Silber/Silver/Argenté	-	-	-	± 10%		(dot or fourth coloured ring) = tolerance on nominal value in %:
Ohne Farbe/No colour/ Pas de couleur	-	-	-	± 20%		(with no D marking: tolerance = 20%)
						(point ou 4e anneau) = tolerance in % of the value nominale.
						(L'absence du repérage D signifie ± 20%)
						Das Fehlen eines Kennzeichens bedeutet, daß die Farbe des Bauteilkörpers die Wertangabe darstellt.
						The absence of a marking signifies that the body colour gives the corresponding information.
						L'absence de tout repérage signifie que la couleur du corps du composant représente la valeur correspondante.
						*Siehe auch DIN 41 429 und DIN 40 825
						see also IEC publication 62-1952 and 62-1968
						Voir aussi DIN 41 429 et DIN 40 825

- 1) Toleranzring, hier nicht spezifiziert.
1) Tolerance ring, here not specified.
1) Anneau de tolérance, ne pas spécifié ici.



